COAL AGE

Volume 14 New York, August 15, 1918 Number 7

Intemperance Hampers Production

By R. Dawson Hall

NO ONE will be disposed to criticize the defense of the mine worker's sobriety recently made by President Hayes, of the United Mine Workers of America. He was probably justified in believing that the worker in the coal mine is no more prone to alcoholism than the men in some other industries. At least, all in the industry desire to believe that this is true.

Nevertheless the chart we publish this week on page 302 shows that every pay day is followed by a period of absenteeism as distressing as it is needless. The chart represents conditions at 6 anthracite collieries and so exhibits the absenteeism of just one-sixtieth part of the whole anthracite region.

It is said that the loss of coal from the man shortage thus caused aggregates 5000 tons a month at the 6 collieries. It would therefore be permissible to figure the loss for the whole anthracite region at 4,000,000 tons a year. Those who have investigated the situation say that the cause of the idleness is the saloon and that the saloon is attracting more men than ever.

On the first day after pay day at the close of last month 240 men were absent from the 6 collieries mentioned and on the day following there were 175 men still absent. Whereas 9300 tons were mined on pay day only 6200 tons were mined on the day following. On one occasion a policeman counted 116 men in the Wilkes-Barre saloons between 8:30 and 11:30 p.m. At one saloon there were 20 men still drinking at 4 a.m.

The conditions shown in the chart exist at mines which are considered leaders in the matter of good management. It is probable that drunkenness is not as rife in these mines as in others, for an attempt has always been made to hire desirable men who were known to work with reasonable steadiness. Just lately, however, managers are hiring all who come without asking questions and there is no attempt to exclude men who are known to be of uncertain habits.

The uncertainty in the daily output naturally ties up many railroad cars. If the operators could know just how many men would work each day, the car supply could be exactly adjusted to needs. As it is, many idle cars have to be carried over whenever men are absent.

If the saloons are to be allowed to ply their trade during the war why not close them between 9 p.m. and 8 a.m.? The mine workers and other workingmen can then get their drink of beer on returning from work, but cannot extend their potations to too late an hour and cannot renew them in the morning before going to their hazardous work. Should this not succeed a more drastic provision could be put into force.

In whatever is done the mine worker should coöperate. The loyal, sober, hard-working patriot predominates in the industry, and he is so strongly opposed to disloyalty, insobriety or slacking that he is sensitive if the charge is wrongly applied to the industry as a whole. Yet he knows well that there are such elements working in the coal mines and with a little urging there is nothing he will not do to root them out.

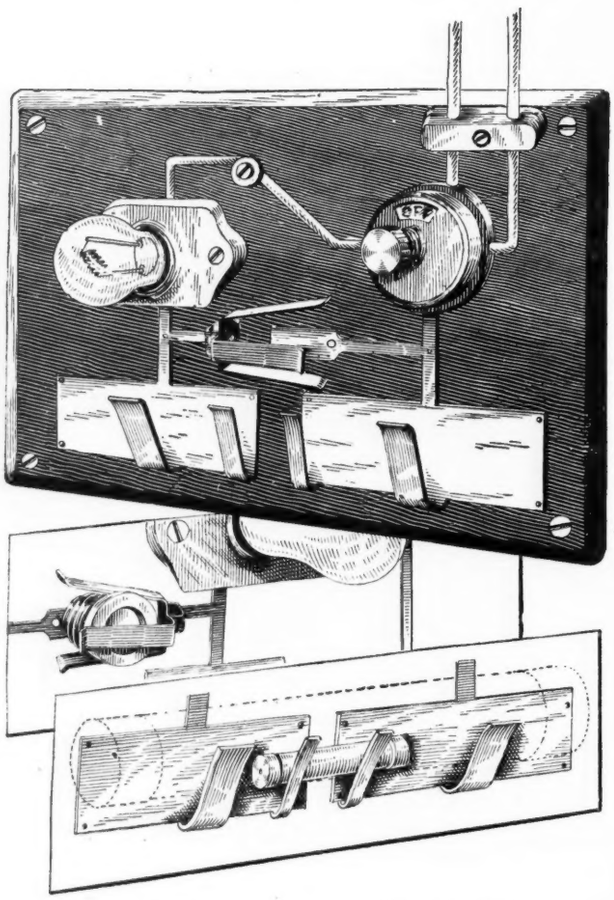
IDEAS AND SUGGESTIONS

A Convenient Fuse Tester

BY L. V. LAUTHER
Guttenberg, N. J

The accompanying illustration shows a device for testing electric fuses. As I had a great many such fuses to test daily I hit upon this scheme to facilitate the work.

The tester, as may be seen, consists of a few properly shaped and formed metal strips and two electrical



THE APPARATUS FOR TESTING FUSES

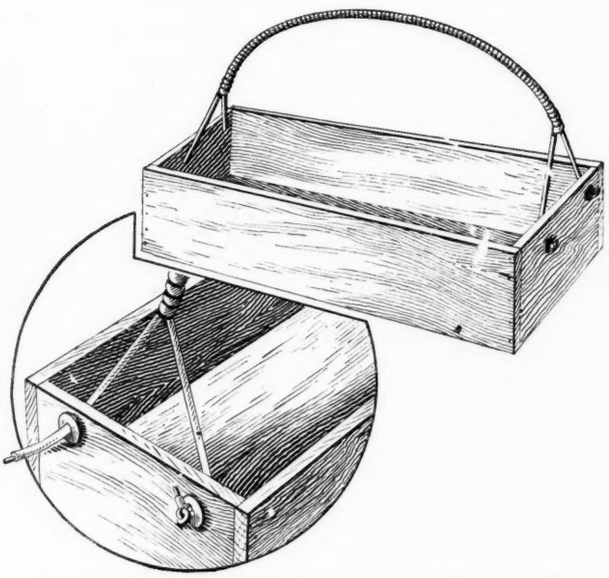
fittings that may be easily procured at almost any mine. The whole apparatus is mounted on a piece of slate that may be sawed from a broken or discarded switchboard. The edges of this piece may be cut away on a bevel if desired.

A single-throw double-pole switch puts current onto the board. If the fuse being tested is in proper shape the light will burn. The illustrations show that a similar arrangement may be employed with equal ease for testing either long or short cartridge fuses as well as those of the socket variety.

Handy Non-Tipping Tool Tray

A common method of making a tool tray or hand tool box is to nail a strap or piece of old belt across the open top of a box. This arrangement is liable to tilt sidewise, allowing the tools to fall out.

The accompanying illustration shows a tool tray of similar character and purpose to the one just described, but so built as to avoid side tipping. The bail, or handle, of this tray is made from a short length of armored two-conductor cable. The armoring is cut away from this cable for a suitable distance at the ends, exposing the two conductors. These are spread apart and each passed through a small hole drilled in



FINISHED TRAY AND DETAILS OF CONSTRUCTION

the end or side of the box. Over the end of the conductor a burr or washer is slipped.

This may either be soldered in the proper position or a knot tied in the conductor resting against the washer. A bail is thus formed that is semi-flexible yet prevents tipping of the box when lifted or held in the hand.

Undercutting or Slotting of Commutators

BY FRANK HUSKINSON
Lafayette, Colo.

It is believed by many that slotting or cutting out the mica between commutator segments is or should be a sure cure for commutator troubles. A few do not believe in undercutting the commutator at all. As a matter of fact, undercutting relieves certain troubles and is to be recommended for all types of mine-loco-

motive armatures. In most cases, also, it is well to undercut the commutators of the motors of mining machines, pumps and stationary motors in general.

Several factors should be taken into account when the undercutting of mica is being considered. The most important of these are the conditions of operation, frequency of inspection and the peripheral speed. Slots that have been undercut are liable to fill up with dust, dirt and oil. This is especially true if the motor is located in a dusty or dirty place. If the machine is of the open type, care should be taken to see that there is no possibility of oil dripping on the commutator; for oil, dust and a few particles of carbon from the brushes and copper from the commutator itself will fill the slots with a conducting composition that will sooner or later cause such trouble as short-circuits between the bars, flash-overs and the like.

A machine that has the commutator undercut should have frequent inspection, as there is a chance of small particles of copper, carbon and other foreign substances lodging between the bars. Such accumulations should be brushed out at frequent intervals.

A low-speed machine with an undercut commutator does not operate with the same degree of safety and satisfaction as a high-speed machine. The machine that operates at a sufficiently high peripheral speed to throw off by centrifugal force any particles of dust or other matter which may enter the slots requires much less attention than the low-speed machine.

The principal reason for slotting a commutator is to relieve it of high micas that have not worn down the same amount as the copper bars. The grade of material that is used in the insulation between the commutator segments is not always uniform. Some of the micas will wear down as fast as the copper bars, but it is a more frequent occurrence to have the copper bars wear down faster than the micas. The result is that the mica insulation between the segments is a trifle higher than the copper segments, and this results in a poor contact between the carbon brushes and the commutator bars. This is in turn intensified by the commutator rotating at a high speed. The high micas tend to impart a vibratory motion to the carbon brushes, thus lessening the contact between them and the commutator. The result is that sparking takes place more or less violently, depending upon the condition of the commutator and the micas.

Too often a case of this kind is aggravated instead of relieved by increasing the tension on the carbon brushes, thus causing a still greater wear on the copper bars and brushes. This also causes increased heating of the commutator. There is only one remedy that will cure this trouble and give permanent satisfaction, and that is to undercut the mica.

With a slotted commutator it is possible to use a soft brush; in fact a softer brush should be used with the undercut commutator than is employed with the commutator that is not undercut.

A slotted commutator permits the use of low-friction, non-abrasive brushes, which increases the life of both commutator and brushes, lowers the heating to a minimum and increases the efficiency of the machine.

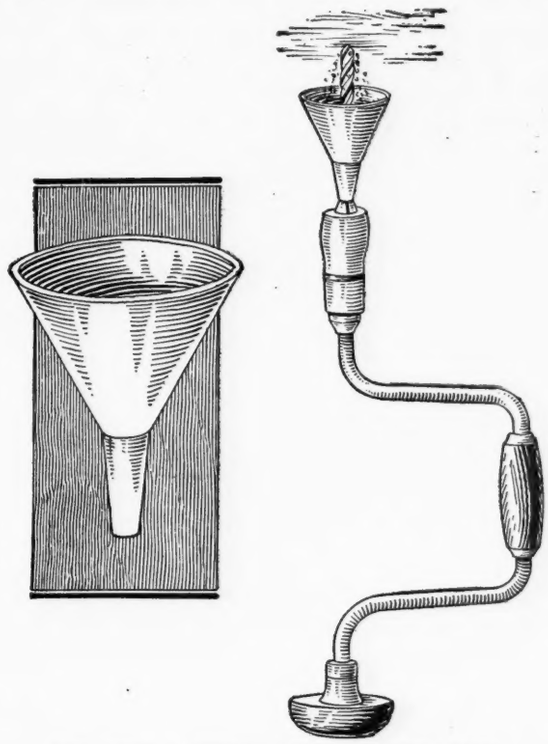
A commutator that has a raw appearance and will not assume the glossy surface it should have normally can be restored to normal and satisfactory condition at once by undercutting the commutator. It will be found that almost any machine, be it motor or generator, will be improved and a higher efficiency will result from having the commutator undercut.

There are several ways and methods of slotting or undercutting the commutator of an armature. A number of devices are on the market that are made to accomplish this result. Some are made to operate while the armature is in a lathe, or other device, and others are used to undercut with the armature in the machine. One means that is in daily use around small plants and shops is a 4- or 6-in. knife-edge file. After a little practice the operator is able to make fairly good progress in undercutting the micas in the commutator with such an instrument. The micas in all cases should be cut out the full width and length of the commutator bar, and the resulting slot carefully cleaned of all burrs and rough edges. It is not necessary that the slotting be very deep, from $\frac{1}{32}$ to $\frac{1}{16}$ in. being generally sufficient.

Grit Guard for Overhead Drillings

BY A. LUCAS
Chester Park, N. Y.

To protect the eyes of the man drilling and keep the machinery below free from grit when working overhead, I hit upon the guard shown in the accompanying illustration. It is simple and inexpensive. A



THE CHIP CATCHER AND ITS OPERATION

funnel of suitable size is placed over the drill, and all the grit and chips collected in it. After the work is done, this material can be easily removed and the funnel cleaned out.

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An Electrically Interlocked Car Haul and Car Feeder

By R. P. HINES
Fairmont, W. Va.

SYNOPSIS—*A car feeder within the mine and a car haul leading to the tipple are so connected electrically that the feeder can not be started until the haul is running at normal speed. Both pieces of apparatus may be stopped from various points, and when so stopped cannot be restarted unless the proper switches are reset.*

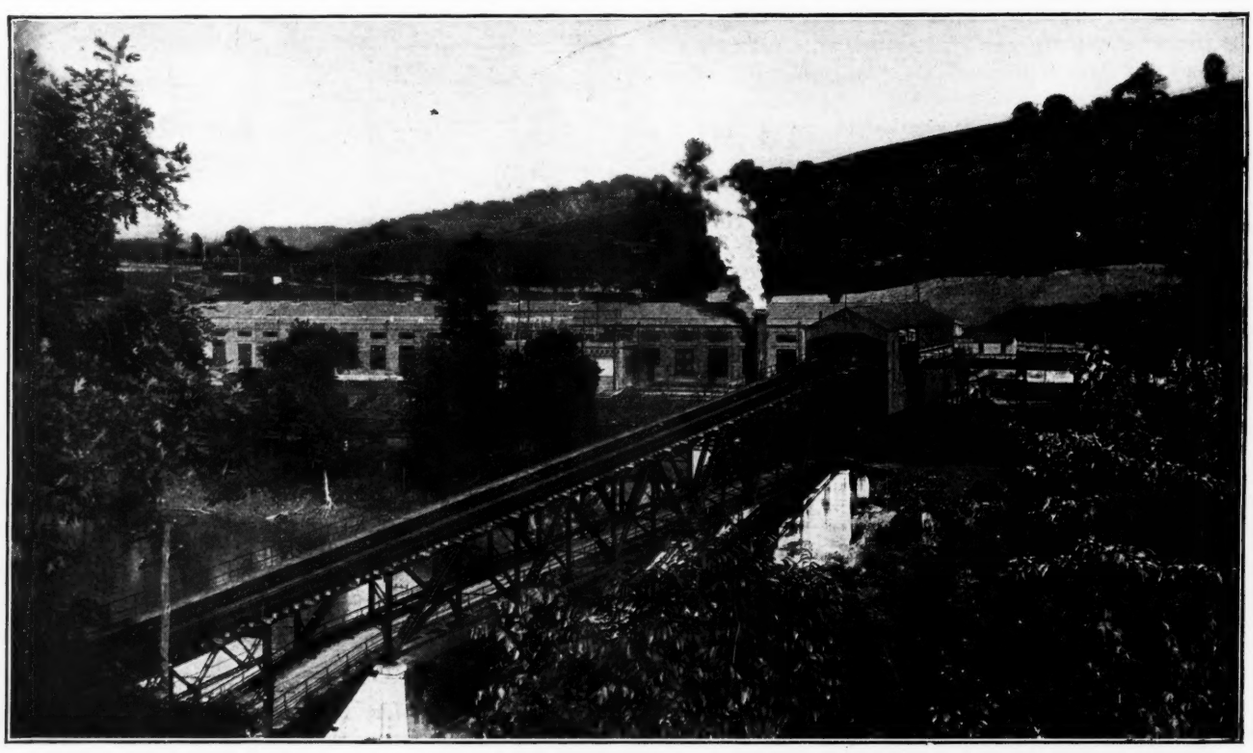
THE two pieces of apparatus which, together with their control, are described in this article are separate and distinct mechanisms. Together, they are used for delivering the loaded coal cars from the bottom of the slope to the dump on the tipple and for returning the empty cars from the tipple to the bottom.

Electric haulage locomotives operating on a 275-volt, direct-current trolley are used to deliver the loaded cars to the bottom and to distribute the empties from this same location. The loaded cars are fed by the car feeder onto the loaded side of the car haul. This pulls them up the slope to the tipple dump and after discharge returns the empties into the mine.

The motor and its starting device for the car feeder are located inside of the mine, approximately 769 ft. from the motor and starting device for the car haul, which are outside, on the tipple. The starters are of the manually operated type and consist of practically standard oil-immersed starting compensators, as it was not deemed advisable in this installation to use the automatic type of starting equipment.

The objects to be attained by the electrical interlock between the two motors and their starting devices were: To render it impossible to start the car feeder, unless the car haul is running and up to speed. To be able to run the car haul without the car feeder being necessarily in operation. To be able to shut down both the car haul and car feeder from any one of several stations; and in the event of the equipment having thus been stopped from any station to make it impossible to again start either or both of the machines, until the switch at the station from which the machinery was stopped has been again placed in its normal operating position. To give an indication to the operator at the car feeder so that in case of a shutdown he can easily determine if it is due to the car feeder; and if so, to make it unlikely that he will attempt to start up until the trouble has been cleared away. In case of a shutdown of the system, due to car-feeder trouble, to make it impossible to start the car haul until the relays on the car-feeder starter are normally reset.

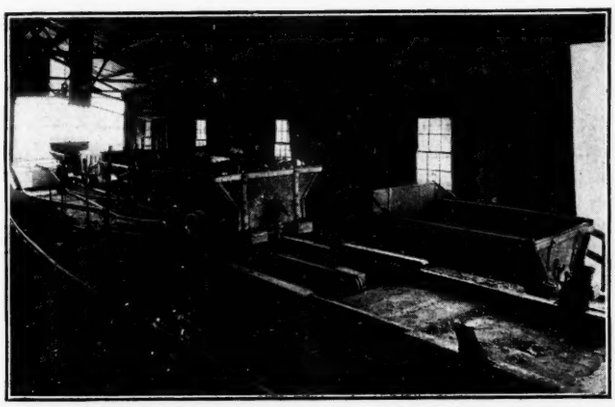
The car haul is of the continuous wire-rope type, dogs being attached to the rope at desired spacing. Guides are provided in which the rollers of the carriages, supporting the rope, run. This rope runs around a master



BRIDGE CARRYING CAR HAUL WITH TIPPLE IN BACKGROUND

wheel on the tipple and a tail pulley at the bottom of the haul, inside the mine. The master wheel on the tipple is driven by a motor through suitable gears and belt connections. The master wheel operates at 2.75 r.p.m. The dogs on the rope, by means of which the cars are attached, are spaced approximately 31 ft. apart. Thus the haul delivers, when operating with each dog carrying a car, 2.75 cars per minute. The cars are provided with a special attachment for engaging the dogs on the rope. The grade up which the haul draws the cars is 25 per cent. for the first 343 ft. at the bottom, and 5.69 per cent. for the balance of 361 ft. to the knuckle, from which the cars run by gravity 65 ft. to the dump.

After a car has been emptied, it is bumped off the dump by the next oncoming car and passes to a kick-back, which delivers it to the empty track of the haul, to be picked up by the rope and returned to the mine. As at present arranged, there are sufficient dogs on the haul to take a maximum of 24 cars on the loaded side and an equal number on the empty side. The descending empty cars aid the motor in pulling up



INTERIOR OF TIPPLE SHOWING CAR DUMP

the loads, so that the minimum load on the motor is with all possible cars on the empty side and no loads coming up. The maximum load is of course with all possible cars coming up on the loaded side and none being returned to the mine on the empty side.

The car-haul motor is a 75-hp., 2200-volt, three-phase, 60-cycle, 900-r.p.m. (synchronous speed), squirrel-cage induction motor, of the regular open type of construction. This motor is connected to the main gears by a Lenix belt drive.

The car feeder inside of the mine operates in much the same manner as the car haul and is designed to handle four cars per minute on a level track onto the car haul. It is gear-driven by a 10-hp., 220-volt, three-phase, 60-cycle, 720-r.p.m. (synchronous speed), squirrel-cage-type open induction motor.

For the control, starting and electrical interlocking arrangement, besides the manually operated motor-starting compensators, there are used two three-pole, oil-immersed, 2200-volt, electrically actuated contactors, two 600-watt, 2200/110-volt potential transformers and two control switches.

The equipment is wired as shown in the accompanying diagram. One of the contactors, called for convenience "the main-line contactor," is connected in the main circuit to the car-haul motor starting com-

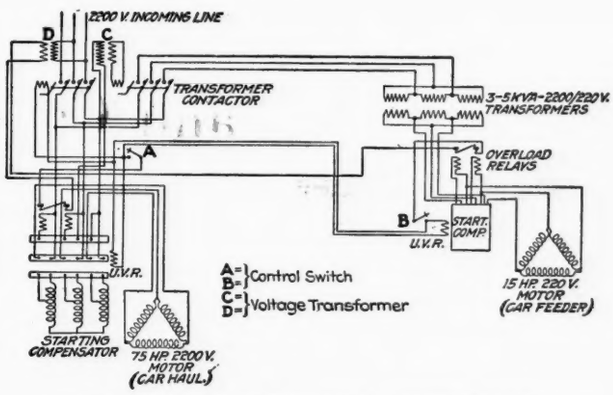
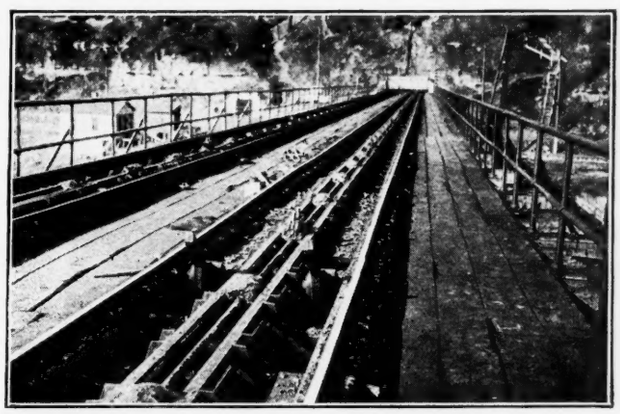


DIAGRAM OF ELECTRICAL CONNECTIONS

pensator. The high-voltage winding of one of the potential transformers is energized from a circuit taken off ahead of the main-line contactor, and from the secondary winding the actuating coil of the main-line contactor and the low-voltage release coils of both starting compensators are energized, there being connected in this control circuit the control switches, like *A* and *B*, for shutting down the system.

The second or transformer contactor has its main contacts connected in the supply circuit to the step-down transformers for the car-feeder motor, located at the pit mouth of the mine, and the actuating coil of this contactor is energized from the low-tension side of a potential transformer whose high-tension winding is connected to the car-haul motor starting compensator so that it is energized only when the starting compensator is thrown to the full running position. This closes the transformer contactor and delivers 2200 volts to the pole-type, step-down transformers for the car-feeder motor, and consequently the proper voltage to the starting compensator for this motor. As is the usual practice the low-voltage release coils of the compensators are wired in series with the contacts of the overload relays on the compensators, which in the compensator for the car-haul motor are self-resetting after opening under overload; but in the compensator for the car-feeder motor these remain open after having been opened by an overload, and have to be manually reset.

Referring to the diagram of connections, the operation of the system is as follows: With the control switches *A*, *B* and *C* closed, the "main-line contactor" will be closed, which will make circuit to the car-haul



VIEW LOOKING ALONG CAR HAUL

motor starting compensator. The car-haul motor is started by means of this compensator, and when this is thrown to the running position the potential transformer *C* will be energized; the secondary of this transformer being connected across the actuating coil of the three-pole "transformer contactor" will instantly close this contactor, supplying 2200 volts to the high-voltage side of the three 15-kw., 2200/220-volt transformers, and thereby a proper low-voltage supply to the 10-hp. car-feeder motor, which can then be started.

As the low-voltage releases of the two starting compensators and the actuating coil of the "main-line contactor" are all energized from the secondary of the potential transformer *D*, it will readily be seen that if any of the control switches such as *A* or *B* are opened, the whole equipment will be shut down. The transformer contactor will also open, as the primary of the potential transformer *C* will be opened when the 75-hp. starting compensator returns to the "off" position.

If one of the control switches such as *A* or *B* is opened, it will be impossible to start this equipment again until the open control switch is reclosed. If any overload relay on either starting compensator opens, the whole equipment will be shut down. This equipment has been in operation for about four years and has proved quite satisfactory in actual service.

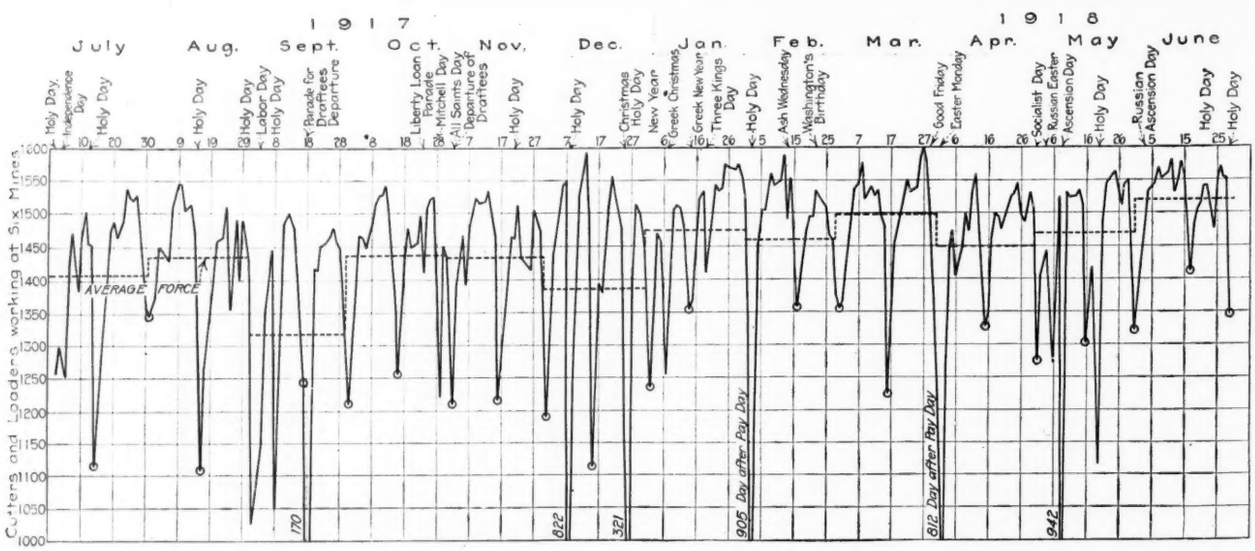
The squirrel-cage type of motor was decided upon because of its ruggedness and serviceability, freedom from moving contacts and ability to operate satisfactorily under adverse conditions of dust, etc., and because it requires practically no attention and is almost "fool-proof." As the tipple is within a few hundred feet of the large central generating station, having approximately 10,000-kv.-a. capacity, and a separate 2200-volt line for its service, the characteristics of the large starting current, etc., of the squirrel cage motor have not proved detrimental.

Tests of momentary starting current with 12 cars on the loaded side, and 6 on the empty side, gave 85.2 amp., the normal full-load current of the motor being 19 amp. With 12 cars on loaded and no cars on the empty side, the running current was 15 amperes.

Intemperate Men Cause Tonnage Loss

THE chart on this page shows the variation in the force of men cutting and loading coal at six mines in the anthracite region. Circles call attention to the number of men reporting on the day after payday. Sometimes, however, the chart cannot record the profundities of low output, and the circle has had to be omitted, a note being substituted.

In the months of July, August and December, 1917, forces of men are always found a few days before the colliery pay. Unquestionably the mines are, even now, not working at full force and the days of carousing which follow pay days and days which commemorate great events in Church history are one cause of the inadequate production. Many people everywhere fail to regard the Fourth of July, Decoration Day, Thanksgiving Day, Lincoln's Birthday and Washington's Birth-



CURVE SHOWING HOW WORKING FORCE AT SIX ANTHRACITE MINES VARIES OWING TO PAYDAYS AND FESTIVALS

there were three days, each of which followed a pay, on which the force dropped to about 1100 men. This was approximately 500 men short of a normal force, namely 1600 men. Allotting 5 tons to each man, which is considered a fair day's work, there was on each of these days a loss of 2500 tons.

It will be noted that following the pay day of Aug. 31, 1917, the force dropped to 1025 men. The largest day as days of solemn commemoration of the nation's holy purpose. And similarly there are very many at the mines who look upon the days which their Church has appointed for certain devout exercises as an opportunity for visiting the saloon and spending the whole day or even more in soul-destroying revelry, contrary to the principles which their Church has always advocated and for which the feasts were instituted.

The War and British Coal Supplies

BY MARK MEREDITH
Liverpool, England

SYNOPSIS—*The necessities of war have made it necessary to place the entire coal industry under government regulation. In this work use is constantly made of existing organizations of both miners and operators. Much good has been accomplished and many economies effected through intelligent control of the coal from the mine mouth to the consumer's bin or bunker.*

COAL is a highly necessary munition of war, and the British Board of Trade early recognized its value by controlling it to the fullest possible extent. It was not possible until the early months of this year to collate the information regarding the steps taken by the British government to insure the adequate supply of coal for all purposes, but in an issue of the Board of Trade *Journal* some outline has been given of what has been done.

In the earlier stages of the war a special staff (a section of the Railway Department) had to be set apart for dealing with the question of coal supplies and distribution. Thus there was no sudden change, but a gradual increase in the board's supervision and powers during the early years of the war, until that stage was reached where complete control became, by common consent, essential.

CONGESTION WAS FIRST DIFFICULTY

The first difficulty which arose after the outbreak of war was one of distribution, due to the congestion of the railways. Next came a decrease in production, in consequence chiefly of the enlistment of trained coal miners in the army. The number of miners at work decreased between August, 1914, and June, 1916, by 13.7 per cent., and the loss in efficiency was greater than can be expressed in a numerical percentage. For the departure of trained men, especially those who were young and vigorous, was not compensated for by the influx of other workmen into the coal-mining industry. A third difficulty, which directly led to the taking over of the coal mines, was labor unrest in South Wales.

When the Board of Trade was faced with the problem of distribution, arising out of railway congestion, the Railway Department of the board, in conjunction with the companies (which had been brought under government control as soon as the war began), took such steps as were necessary to expedite supplies to meet local shortages, particularly in the London area.

In the winter of 1914-15, however, it became clear that some more general action was necessary, and pressure was put upon the collieries to secure the continuity of supplies to important consumers. Recognizing that adequate supplies for home consumption was a primary necessity, a coal exports committee was appointed by the board president in May, 1915, to restrict exports, on the recommendation of the retail coal prices committee.

The situation at home was eased by these measures, but the restriction of exports had financial and diplomatic disadvantages, so that it had to be applied cautiously. Since part of the shortage was still local and due to defects in distribution, and in particular in order to insure adequate supplies, it was decided in the second winter of the war to set up distribution committees whose function it was to arrange for the most economical system of distribution.

These district coal and coke supplies committees were appointed in the different colliery districts on the nomination of the local coal owners' associations. A central committee, consisting of representatives of the Board of Trade, the Admiralty, the Home Office, the Ministry of Munitions, the Railway Executive Committee, the coal mining industry, and the coal trade, was also appointed to consider such questions of policy as might arise. This was called the Central Coal and Coke Supplies committee.

NO GENERAL SHORTAGE EXISTED

At first, the committees were upon a voluntary basis, but the inevitable interference with contracts gave rise to legal difficulties and rendered necessary the establishment of the system upon a compulsory basis. The coal output of the kingdom had fallen from 140 million tons for the six months, January to June, 1914, to 128 million tons for the six months, January to June, 1916. The great drop in the output was for the second six months of 1914 (to 123.6 million tons), after which there was a slight but steady advance.

Though there was never during the first two years of the war an actual shortage of coal (taking the country as a whole), the problem of dealing with war and other demands could only be solved by making the best use of the available supply. The industrial demands fell away, while those of the admiralty, of the munition works, and of the allies tended to increase. Half of the French coal fields were, unfortunately, in the possession of the enemy. The first step toward compulsion was taken under the Defense of the Realm Regulations, giving to the government departments concerned power to give directions with a view to securing priority for the delivery of coal and coke. This power was delegated to the joint secretaries of the central coal and coke supplies committee.

Another step toward the assumption of a general control was taken when in July, 1915, the Price of Coal (Limitation) Act was passed. This act resulted from the investigations of a committee, appointed by the president of the Board of Trade on Feb. 25, 1915, to inquire into the retail prices of house coal. The Price of Coal (Limitation) Act prescribed that the price of coal at the pit's mouth must not exceed by more than 4s. ($1) per ton (or such other amount as the Board of Trade might order) the price of the same description of coal sold in similar quantities under similar conditions at the corresponding date during the twelve months ended June 30, 1914.

Voluntary arrangements were made with the London

coal merchants for limiting the retail prices of house coal, and it was suggested to local authorities throughout the country that they might make similar voluntary arrangements with the coal merchants in their districts. The measures, enumerated above, were largely of a voluntary character, and though they met with considerable success, it eventually became clear that a comprehensive scheme for the control of the country's coal supplies was demanded in the national interests.

In February, 1915, the Home Office appointed a coal-mining organization committee, consisting of representatives of coal owners and miners, "to inquire into the conditions prevailing in the coal-mining industry with a view to promoting such organization of work and such coöperation between employers and workmen as, having regard to the large numbers of miners who are enlisting for naval and military service, will secure the necessary production of coal during the war." This committee, which is now merged in the coal controller's department, did much useful work and formed the nucleus of the advisory board of coal owners' and miners' representatives which now assists the controller.

In order, further, to provide for coördination between the committees set up by the Board of Trade and Home Office which were dealing with coal problems, Lord Milner acted for some months before September, 1916, as government supervisor of the supply and distribution of coal. He was chairman of a select committee of four members, of which the other three were the chairman of the coal-mining organization committee, the coal export committee, and the central coal and coke supplies committee. The coal exports committee still remains in being.

Mines Might Be Seized

Labor discontent in South Wales brought matters to a head, and on Nov. 29, 1916, a regulation was made under the Defense of the Realm Act giving to the Board of Trade power to take possession of any coal mines where it appeared to it expedient. The owner of any mine taken over under the regulation is bound to "comply with the directions of the Board of Trade as to the management and use of the mine," but the liability of colliery officials under the Coal Mines Acts are not affected.

Within three months from the taking over of the South Wales coal field all the mines in the kingdom came under control, and the coal mines department had been established by the president of the Board of Trade. On Feb. 22, 1917, an order was issued by the board taking possession of all coal mines as from Mar. 1, and Guy Calthrop, the general manager of the London & North Western Ry., was designated controller of coal mines. An advisory board, consisting of representatives of the coal owners and coal miners, was appointed to assist him. The central coal and coke supplies committee ceased to exist, but the local committees were retained in being, and the scope of their activities has been considerably extended.

The powers given to the coal controller's department are quite comprehensive. The Board of Trade was given authority to take possession of any coal mines and of land for colliery transport purposes, and to exercise powers similar to those of the food controller's with respect to any necessary article of commerce (other than food), and including horses and horse-drawn vehicles. The powers comprise, for example, the regulation of the "production, manufacture, treatment, use, consumption, storage, distribution, supply," etc., of any article, the fixing of maximum or minimum prices, the issue of orders requiring returns as to stocks, authority to requisition stocks, and so on. These wide powers may be exercised either generally or in specific cases. The controller of coal mines has therefore full power to control the production, distribution, prices and consumption of coal, in so far as he may consider necessary.

An agreement between the controller and the mining association, with respect to the compensation to be paid to coal owners in full satisfaction of all claims arising out of control, was signed on July 20, 1917. Under this agreement the owners surrender 95 per cent. of any profits in excess of the "profits standard" (that is, the average profits of the best two out of the three years before the war, or the best four out of six), the controller receiving what is not payable for excess profits duty. The controller, on the other hand, guarantees the pre-war profits standard subject to a reduction where the output is reduced. There is also a limitation of retainable excess profits to one-fifth of the profits standard.

Where the controller closes a mine, the cost of maintaining and reinstating it does not fall on the state, but may (on the application of district associations) be met by a levy on the districts in which it is situated. Provisions are included for fixing substitutes for the profits standard in case of hardship. This agreement received royal assent as the Coal Mines Control Agreement (Confirmation) Act.

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Existing Organizations Utilized

From the first it has been the controller's desire to make the fullest use of the existing machinery of the coal-owners' and of the miners' organizations. With this object in view, an advisory board was set up with which he would be kept in constant touch, and by whose experience and technical knowledge he could be assisted. The board consists of seven representatives of coal owners and seven officials of the miners' federation.

This advisory board meets about twice each month and has considered such important questions as recruiting, labor disputes, miners' holidays, mobility (the transfer of men from one district to another), short time and absenteeism, the settlement of price lists, and the supply of pitwood. The assistance of the advisory board has been of the greatest value, and has enabled the controller rapidly to explore the problems which constantly arise upon his horizon.

One of the chief objects of control was to maintain the output of coal, and the postponement of development work was recommended by the coal-mining organization committee in its first report as one means of keeping production at the maximum. It is an essential feature

of the system of control that the actual management of the mines should remain as far as possible in the hands of the owners, but considerations of man-power and the shortage of materials render some regulation unavoidable. Both material and labor must be put to the most productive use, and be kept for those classes of coal which were most in demand. New sinkings are rarely permitted. The employment of a staff of district inspectors has been sanctioned by the treasury, and these officers report on the necessity of proposed works, and on the relative urgency of demands for materials.

Experience since the coal mines were taken over justifies the assertion that the miners now realize that they are working for their country, rather than for the private profit of their employers. There has been a marked decrease in industrial unrest, and a greater willingness to regard work in the mines as war-service of the first importance. The chief labor event since the control was established was the demand of the miners' federations for a 25 per cent. increase in wages to meet the increased cost of living.

This demand was presented on Aug. 28, 1917. As the result of subsequent negotiations the miners finally accepted increases of 9s. ($2.25), and 4s.6d. ($1.12) in the case of boys, a week—that is, 1s.6d. (37c.) a day for each day on which a man works or is ready and able to work, and 9d. (18c.) a day for boys under 16 years old. A feature of the arrangement is that the increase of 1s.6d. (or 9d.) a day is paid even when the pit is idle for lack of orders; for example, in the exporting districts—and this is done in order to give some relief to men in the export districts who are suffering from irregular working of the mines, as the result of shipping losses. Such irregularity is no fault of theirs or of the coal owners.

By the foregoing arrangement with the miners, the controller was able to convert a demand for a percentage increase into the concession of a flat rate. An advance on a percentage basis would have chiefly benefited men who were getting regular work, and who were previously earning the highest wages. The settlement has been extended by the Ministry of Munitions to workers in many cognate industries. The "war wage," as it is called, dates back to Sept. 17, 1917. An inevitable consequence has been an increase in the pithead prices of coal of 2s.6d. (62c.) a ton.

Disputes Are Reported

While the policy of the department is to insist upon the use of local machinery of owners' and miners' associations for the settlement of disputes, a close watch at headquarters is kept upon them. All disputes which may involve a stoppage of work are reported at once to the controller. His friendly offices are always at the disposal of the parties, either personally in London, or locally through members of his staff.

The controller of coal mines inherited from the Home Office the functions of that department regarding the recruitment of miners, with the exception of the supervision of the colliery recruiting courts. The central court sits at the coal mines department and one of the staff acts as its secretary. These functions have now been transferred by the war cabinet to the Ministry of National Service, while the controller continues to act in an advisory capacity.

One of the most difficult problems before the controller has arisen from the diminished supply of ships in certain export districts (East Fifeshire, the Lothians, Northumberland, Durham and portions of the South Wales field). It is not possible to keep the pits in these districts regularly working and the men constantly employed, although in most other coalfields, and in many other industries of national importance, there is an acute shortage of labor.

The problem has been to make labor more mobile and to effect the necessary transference. Various measures are being taken to solve the difficulties which have arisen. For example, by arrangement with the railway executive committee, a train service was put on to enable miners who live in the east of Fifeshire (where short-time operations have been serious) to go to the western districts of that county where the pits are working better. Special commissions of inquiry (of which the local miners' leaders are members) investigate the short time worked in some districts, and make suggestions for an improvement.

Mobility Bureaus Are Established

In order to deal with the whole question systematically the controller placed before the miners' federation of Great Britain a proposal for the establishment of mobility bureaus, to be managed by the miners' federation and their district associations. The purpose of the bureau was to transfer coal miners from operations that were not working full time, to other coal, fireclay or ganister mines where their labor was required. The federation has accepted the proposal and district mobility bureaus are being set up. The controller is also collaborating with other departments (such as the Ministries of Munitions and of National Service) in order to transfer surplus mining labor into other occupations, such as timber-felling, iron-stone and iron-ore mining, the shipyards, etc.

The broad results of the measures which have been taken by the Board of Trade may be shown by the figures of coal outputs since the war began. They are given below in millions of tons for six-month periods during the four years 1914, 1915, 1916 and 1917:

	Million Tons		Million Tons
January to June, 1914.....	140.0	January to June, 1916.....	128.3
July to December, 1914....	125.6	July to December, 1916....	128.1
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It is remarkable when all the difficulties are considered that have arisen through the long duration of the war and the calls upon the national man-power, that the output of the British coal mines during the last year amounted to 247.7 million tons, or only 8.7 million tons (3.4 per cent.) less than during 1916. It was not until the second half of 1917 that the output fell below that for the second half of 1914.

It will be seen from the foregoing figures of output that there has never been a shortage of coal in the sense that there has been a shortage of petrol (gasoline). All the coal used in Great Britain is there produced; while, with the exception of the comparatively small production from Scottish shale, we import all our petrol supplies.

The coal problem has, throughout, been primarily one of labor and distribution. The government control of the collieries, through the Department of Coal Mines,

coal merchants for limiting the retail prices of house coal, and it was suggested to local authorities throughout the country that they might make similar voluntary arrangements with the coal merchants in their districts. The measures, enumerated above, were largely of a voluntary character, and though they met with considerable success, it eventually became clear that a comprehensive scheme for the control of the country's coal supplies was demanded in the national interests.

In February, 1915, the Home Office appointed a coal-mining organization committee, consisting of representatives of coal owners and miners, "to inquire into the conditions prevailing in the coal-mining industry with a view to promoting such organization of work and such coöperation between employers and workmen as, having regard to the large numbers of miners who are enlisting for naval and military service, will secure the necessary production of coal during the war." This committee, which is now merged in the coal controller's department, did much useful work and formed the nucleus of the advisory board of coal owners' and miners' representatives which now assists the controller.

In order, further, to provide for coördination between the committees set up by the Board of Trade and Home Office which were dealing with coal problems, Lord Milner acted for some months before September, 1916, as government supervisor of the supply and distribution of coal. He was chairman of a select committee of four members, of which the other three were the chairman of the coal-mining organization committee, the coal export committee, and the central coal and coke supplies committee. The coal exports committee still remains in being.

Mines Might Be Seized

Labor discontent in South Wales brought matters to a head, and on Nov. 29, 1916, a regulation was made under the Defense of the Realm Act giving to the Board of Trade power to take possession of any coal mines where it appeared to it expedient. The owner of any mine taken over under the regulation is bound to "comply with the directions of the Board of Trade as to the management and use of the mine," but the liability of colliery officials under the Coal Mines Acts are not affected.

Within three months from the taking over of the South Wales coal field all the mines in the kingdom came under control, and the coal mines department had been established by the president of the Board of Trade. On Feb. 22, 1917, an order was issued by the board taking possession of all coal mines as from Mar. 1, and Guy Calthrop, the general manager of the London & North Western Ry., was designated controller of coal mines. An advisory board, consisting of representatives of the coal owners and coal miners, was appointed to assist him. The central coal and coke supplies committee ceased to exist, but the local committees were retained in being, and the scope of their activities has been considerably extended.

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The coal problem has, throughout, been primarily one of labor and distribution. The government control of the collieries, through the Department of Coal Mines,

has facilitated the apportionment of supplies of fuel to industrial consumers of national importance, particularly in those cases in which it has been necessary to provide supplies of special qualities or grades of coal by diversion from consumers of less importance.

To effect economies in railway transport, a redistribution scheme was worked out with the object of maintaining the consumption of coal as near as possible to the point of production. The necessary powers were provided by the coal-transport order of 1917 (made by the Board of Trade under the Defense of the Realm Regulations on July 4, 1917) and by the direction of the controller of coal mines which were issued under this order. The country was divided into areas, the interchange of coal between producing areas was restricted, and consuming districts were allotted specific sources of supply.

The redistribution scheme came into operation on Sept. 19, and the estimated saving in railway haulage alone—apart from other economies in railway operation—is 700 million ton-miles annually. The controller is now taking up the question of unnecessary transport within the areas. Canal transport for coal is made use of wherever practicable. The department has been able to accumulate technical records of all industrial processes, and its staff is assisted by representatives throughout the country. Firms are visited and reports submitted upon any difficulty which arises out of the allocation of supplies.

The Regulation of Household Consumption

When it was decided in August, 1917, to control household consumption of coal in the London area, steps were taken to register all coal merchants, to set up local organizations for watching the interests of consumers, and to devise a scale of allowances which would be equitable as between the different classes of users. All persons engaged in the distribution of coal were recorded and arrangements made to keep each one under review, so as to insure that he continued effectively to carry on his trade.

A census of men and horses was undertaken in order to protect the facilities for distribution and, if possible, to augment them. The coöperation of the food production department of the Board of Agriculture was secured in regard to horses. A local organization for watching the interests of consumers was set up by the appointment of local coal overseers by the local authorities in each district. With a view to assisting the local coal overseers, a coal merchant, known as the coal merchants' supervisor, was appointed in each district as well. This organization, which involves the coöperation of representatives of both merchants and consumers, enables local troubles to be settled at the source.

In order that an equitable distribution of coal might be secured, allowances were fixed in respect to houses of different sizes, and arrangements made to assess exceptional buildings and premises. Forms for requisition were issued for the purpose early in September, and the machinery has worked smoothly and satisfactorily.

The object of the scheme of allowance was to reduce the extravagant consumption of coal by the wealthy classes, to do away with the use of coal in unnecessary buildings, and thus to insure that a supply should be available for the poorer people. At the same time it was sought to diminish the total demand for coal. A reduction in the amount burned was made urgent by the difficulties of labor and transport.

A special section of this branch of the control system has been set up to review the facilities for selling coal in small quantities. Stocks were provided in difficult areas under the control of the local authorities, and every encouragement was given to the small dealers and retailers to continue in business. The demands of the war have encroached severely upon this unorganized body of distributors, many of whom carried on one-man businesses. It was by no means easy to organize those who still remained and to supplement their effectiveness from other sources.

Local house-coal distribution committees have been appointed in towns with a population of 20,000 or over, and emergency stocks of coal are being accumulated in these municipalities under the direct control of the local authorities. Smaller towns have been invited to combine their urban and rural districts to form committees on similar lines; and, as in the case of the larger towns, the controller's representatives visit the committees in an advisory capacity.

The prices of coal at the pit's mouth were fixed by the Price of Coal (Limitation) Act, passed in July, 1915. Under the régime of the controller of coal mines the regulation of prices was extended to cover both wholesale merchants' charges and retail prices. Powers were conferred by the wholesale-coal-prices order and the retail-coal-prices order made by the Board of Trade on Sept. 5 and 11 respectively. The function of fixing in each locality the maximum retail prices of house coal which would comply with the requirements of the retail-coal-prices order was assigned to local authorities throughout the United Kingdom.

Exports Decreased

The effect of the shortage of shipping resulting from the operations of enemy submarines was felt in the early part of 1917 in the form of a considerable reduction in the quantity of coal exported, and a serious decline in export prices. In order to deal with the proposition of prices, a code of directions as to the sale of coal was issued by the controller of coal mines on June 28, 1917, embodying a schedule of prices for coal sold for export or bunkering. The scheduled prices operate as fixed prices in the case of shipments to France and Italy.

The much-reduced imports of pitwood made difficult the provision of adequate supplies of props, without which coal mining could not go on. At first the controller made use of the personnel of the old pit timber committees throughout the country which had been set up by the Home Office, and which were worked under a joint committee of members of the coal-mining organization committee of the Board of Agriculture with a representative of the Board of Trade. He also appointed eight district pitwood committees throughout the country, the chairman in each case being one of H. M. inspectors of mines, with an officer paid by the controller to act as the chairman and technical assistant.

The first duty of these committees was to perfect

the formation of district pitwood associations, and seven associations have been formed to develop the supply of home-grown timber, which became necessary as the result of the curtailment of the importation of pitwood by the war cabinet. The great majority of the collieries are readily joining these pitwood associations, and colliery owners who show reluctance are being strongly pressed to join.

In July the controller of timber supplies offered to take over from the controller of coal mines the duty of supplying the collieries with pitwood and other necessary timber together with the supervision of the district pitwood committees. This offer was accepted, and the controller of timber supplies is now responsible for the work. The functions of the controller of coal mines respecting pitwood have been confined, since then, mainly to watching the activities of the district pitwood committees, encouraging the formation of pitwood associations, and dealing with applications from colliery companies for permits to purchase soft imported wood.

On Dec. 19 the controller of coal mines (acting after consultation with the controller of timber supplies) issued detailed instructions regarding stocks, prices and contracts for pitwood and other mining timber. Stocks were limited to twelve months' future consumption. This was done because some collieries had stocks much exceeding their requirements for such a period, while others had nothing like that quantity. The maximum prices which collieries were permitted to pay were fixed in accordance with the various classes of timber and the position of the coal fields. Certain existing contracts for pitwood were ordered to be submitted to the controller for direction and advice as to revision.

Results Obtained Justify Control

It may be said that the policy of taking over the coal mines, and of controlling the distribution and prices of coal, has been justified by its results. In 1913 there were 1,110,884 men employed in and about British coal mines, and of this number 316,000 have joined the army. Other labor has been drafted in, so that the employees during 1917 numbered approximately 987,000, a reduction of only 133,000 men. Still, the loss of the young, vigorous and trained miners was severly felt, and it is a matter for satisfaction that the output for coal during the years 1915, 1916 and 1917 should have been so well maintained.

The present output is naturally a good deal less than it was before the war—this was inevitable—but, after taking account of the big reduction in coal for export, it may be said that the amount available for inland consumption, the admiralty, and for ships' bunkers, is almost as large now as it was in 1913. The admiralty's requirements, of course, expanded enormously, and the supplies available for inland consumers (other than direct war industries) have had to be cut down and the strictest economy insisted upon.

Everything possible is being done to secure economy. Electric supply undertakings have been urged to interconnect wherever this can be done at a small expenditure of materials and labor; representations have been made to the Home Office in order to secure lighting restrictions and the early closing of shops; and the need for economy has been brought prominently before the public by appeals to both industrial and domestic consumers. The London district has been definitely rationed. The whole country will undoubtedly be rationed before the close of 1918.

The net result is shown in the following table, which gives the comparative figures of coal production and consumption for the years 1913, 1916 and 1917:

	1913 Million Tons	1916 Million Tons	1917 (Partly Estimated) Million Tons
Coal output	287	256	247.5
Export	77	42	38
Balance available for inland, admiralty and bunkers	210	214	207
Stocks at pithead on hand at close of year	2	2	4.5

It will be seen that the coal available for inland, admiralty and bunkers shows only a slight falling off as compared with the pre-war year 1913, while stocks on hand at the end of the last year show an increase. This increase, is however, largely made up of small coal, which cannot now be exported.

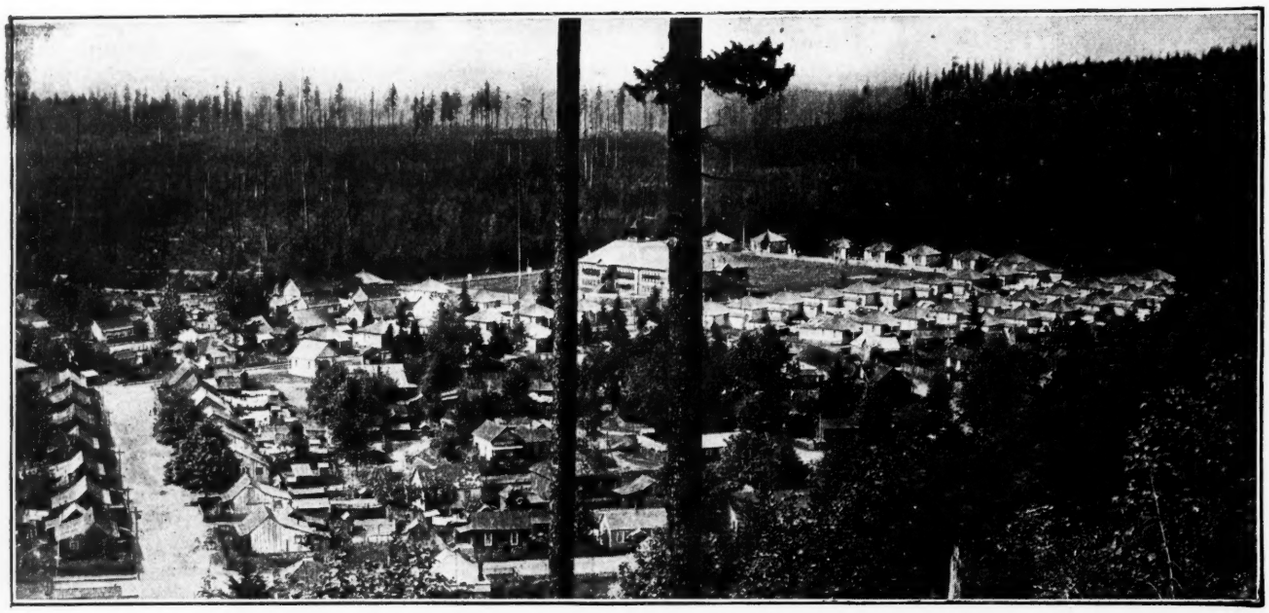
The exports have fallen off largely in 1917, owing to the shortage of shipping, and the decrease in exports at the end of 1917 as compared with the end of 1916 was approximately 3,000,000 tons per annum.

Ohio Production in 1917

The Industrial Commission of Ohio, Department of Investigation and Statistics, Columbus, Ohio, has tabulated the coal production for the year ending Dec. 31, 1917, and has classified the data according to method of production by counties, as follows:

County	Tons			
	Pick-Mined	Machine-Mined	Stripped	Total
Athens	356,973	5,956,446	200	6,313,619
Belmont	516,709	10,639,917	.....	11,156,626
Carroll	165,228	320,508	1,356	487,092
Columbiana	108,969	507,615	341	616,925
Coshocton	208,174	163,611	.....	371,785
Gallia	24,964	3,306	.....	28,270
Guernsey	69,847	3,938,967	15,451	4,024,265
Harrison	58,369	877,205	286,987	1,222,561
Hocking	228,668	1,973,190	.....	2,211,858
Holmes	20,144	.....	.....	20,144
Jackson	655,968	358,824	1,457	1,016,249
Jefferson	240,914	4,733,481	767,845	5,742,240
Lawrence	241,333	.....	.....	241,333
Mahoning	33,895	16,642	.....	50,537
Medina	10,088	.....	.....	10,088
Meigs	160,129	1,107,015	.....	1,267,144
Monroe	682	.....	.....	682
Morgan	1,160	324,848	.....	326,008
Muskingum	195,990	345,171	100	541,261
Noble	8,822	999,697	.....	918,519
Perry	354,491	1,987,533	103,090	2,445,114
Portage	45,082	47,357	.....	92,439
Scioto	2,608	.....	.....	2,608
Stark	314,231	152,001	4,802	471,034
Summit	29,680	.....	.....	29,680
Trumbull	1,266	.....	.....	1,266
Tuscarawas	586,988	1,157,474	44,338	1,788,800
Vinton	62,872	150,068	.....	212,940
Washington	1,137	.....	.....	1,137
Wayne	13,072	52,690	.....	65,762
Total	4,728,453	35,723,566	1,225,967	41,677,986

MOVIE, BARBER SHOP AND COMMISSARY OF THE SOUTHERN MINING CO., BALKAN, KENTUCKY



GENERAL VIEW OF CARBONADO

Coal Mining in Carbonado, Washington*

By F. G. JARRETT
Superintendent of Mines, Eska Creek, Alaska.

SYNOPSIS—*The mines here described lie in an extremely rough country, and many difficulties not found in level mining are encountered. Longwall is worked in a steeply pitching bed, the coal being sent down a chute to the gangway. The inclination of the bed facilitates ascensional ventilation. A peculiar "gas belt" is also encountered in one mine.*

THE mining town of Carbonado, owned by the Carbon Hill Coal Co., is situated in Pierce County, Washington, on a branch of the Northern Pacific Ry., and is one of the oldest mining towns in the state. Owing to the immense area of coal available and the progressive methods being adopted by the present management, the town will be on the list of big producers when many other mining camps now operating are forgotten.

Many difficulties are encountered here that are of special interest to the mining student. Fortunately, most of these can be overcome with the aid of capital and engineering skill. The Carbon River cuts diagonally across the coal beds, to a depth of approximately 400 ft. along the line of a large fault separating the southern portion of the formation from the folded part on the north. This exposes numerous beds of high-grade bituminous coal.

The strike of the beds on the south side of the river is fairly uniform and nearly north and south; the dip varying from 10 to 80 deg. Due to the depth of the narrow canyon resulting from the action of the river, the company was confronted with a problem in outside transportation. The main difficulty lay in the scarcity of available room for yards, tracks and plants. Finally, the cleaning plant and coke ovens were built about one mile down the river on the first piece of ground available to which the Northern Pacific R.R. connected by means of a spur track. To reach the cleaning plant, the coal is conveyed from the several mine mouths by small steam locomotives hauling from 60 to 80 tons per trip.

This particular mile of track has cost the company considerable money and worry in building and maintenance, because of the loose character of the hillsides, which necessitated the building and driving of tunnels and the placing of cribbing and sheds, to prevent land slides. In this connection boilers, hoisting engines and tracks have more than once been retrieved from the river bottom. On the other hand, these difficulties are somewhat offset by the amount of available coal to be won by drifting in at water level.

Most of the operations have been confined to water-level mining, although a few slopes have been sunk on the different beds. Some of these have been abandoned. On the southwest side of the river a slope has been sunk nearly 2000 ft. on the Wingate bed. Higher up the river, on the same side, a new slope 8 x 16 ft. in the clear has been sunk 1200 ft. on the No. 10 seam, with the intention of tapping five or more beds by means of rock tunnels. The coal from these seams will be hauled by storage-battery locomotives and delivered to bunkers at the slope on each level. A 750-hp. electric hoist has been installed for hoisting purposes, using two 10-ton skips on a 60-lb. double standard-gage track.

For ventilating purposes, the company is using a Sirocco fan, with 200,000 cu.ft. capacity. Both the hoist and fan are installed in chambers hewn out of the solid rock, in order to effectually protect them from slides.

*Paper read at Puget Sound meeting of the American Institute of Mining Engineers.

All the water will be drained to the main pumping station at the lower level, where two centrifugal pumps and one Aldrich quintuplex pump will discharge it to the surface.

The fundamental principle embraced in this mine is the consolidation of several units by centralizing the operations, thereby eliminating or reducing the overhead expenses of hauling, pumping and ventilation. Another feature used in conjunction with this system is the driving of all gangways in rock (foot-wall), connecting the rock chutes to the coal bed above every 20 or 50 ft., as the conditions may require. Some of the advantages to be derived by driving rock gangways are as follows:

First, a saving of coal is secured as well as an increased output by working several levels simultaneously, if desired. Under the old system gangways, on pitching seams, were invariably driven in the coal, making it impracticable to work the lower levels until the upper ones were worked out. If it became necessary to commence on the lower levels before the upper levels were finished, a barrier pillar had to be left in to protect the upper gangway. As will be evident, this usually ended in the loss of the barrier pillar, and, in many instances, the gangway also, due to robbing too close to this roadway, not forgetting poor Jim, or some other good official, who "got it in the neck" through following instructions for more coal.

The miner is exceptionally rare who can not cite cases of lost coal, due to the difficulty in keeping open the gangways. Neglecting the future is a common error in the history of coal mining. This mistake is often attributed to the shareholders in their undue haste to participate in dividends as soon as they are able to dump into the railway car.

A vast difference exists between mining methods in the West and those followed in other countries. When a mine is opened in Europe the owners endeavor to extract all the mineral possible. In the West the custom is to abandon a mine when a little difficulty is encountered or when the profits run low, and open another one, leaving behind, in many cases, considerably more coal than has been extracted. Our motto is: "A new mine every 20 years; a new boss every two years." Rock gangways will put a check on this waste by providing an outlet which, under proper management, should extract every ounce of coal in the lifts, at the same time allowing the management to work two or more levels simultaneously.

The second advantage is that of ascensional ventilation. Upon the completion of the upper working the lower lift is advanced under other methods up to this abandoned gangway, which is usually caved tight. Then comes an increased cost in addition to inefficient ventilation. The chief feature in the ventilation of inclined beds is to so arrange the air current that the circulation will be ascensional, more especially in seams generating marsh gas. The reason is obvious. Marsh gas (CH_4) being lighter than air has a natural tendency to rise. Ascensional ventilation is impossible with the top gangway caved.

Third, with the upper gangways caved, the mine workers always feel the dread of being entrapped in the event of anything happening in the working gangway.

Fourth, timber distribution is much easier. With

AFTER A LANDSLIDE THAT CARRIED BOILER HOUSE AND BOILERS INTO THE CARBON RIVER

the upper gangway open, the foreman can distribute the timber to the workings below much more cheaply and effectively than by hauling it up the pitch, in the event of the upper gangway being closed.

Fifth, the cost of re-timbering is reduced. The common method is to extract the pillars when the breast, or chutes, have reached the upper gangway. Insufficient coal is often left to protect the working gangway. This results in the timbers being crushed and the commencement of a cost which never ends, until, in disgust, the gangway, together with thousands of tons of good coal, is abandoned. Invariably this performance is repeated at the next level.

With rock gangways, this cost and loss of coal, if not entirely eliminated, is reduced to a minimum. The initial cost of driving the gangways in rock is generally higher than in coal, but this is soon offset by the many advantages just mentioned.

Owing to the many beds in Carbonado the mining methods employed vary in accordance with the character of the bed, the overlying and the underlying strata, and the inclination of the seam. Probably the most interesting system employed is the 4-ft. Miller seam worked longwall, on a pitch of approximately 40 deg. Successful longwall mining requires a roof of a yielding nature that will settle uniformly. If this condition exists in a pitching bed, ideal ventilation and complete extraction of the coal are assured.

As compared with flat longwall, the pitching beds possess the advantages of requiring less retimbering, no old workings to keep open, no brushing of roadways, no cogs or packs to build, and ideal ventilation. The disadvantages are the possibility of congestion, considering that the coal must be delivered down the main chute, and the possibility of neglecting to keep the wall at a sufficient angle to prevent the break from closing the entire face.

In former years the company operating at Carbonado had endeavored, unsuccessfully, to work this mine on the chute and breast-and-pillar system. Because of the soft swelling nature of the roof, it was found impossible to keep the workings open. Finally, it was decided to abandon them. Eventually another attempt was made, this time on the longwall system. Success attended these efforts and proved that coal beds, like human beings, had their peculiarities, which required different methods in handling.

As in the other beds, rock tunnels are driven in the foot wall and are really more essential to the success of this method than in chute and pillar workings. The gangway is kept in advance of the wall and connected by rock chutes, every 25 ft., to the counter above. The intervening strata being strong sandrock 12 to 15 ft. thick proves effective in protecting the gangway. Immediately above the counter gangway angle chutes are driven into the open wall above. This lift is usually 500 ft. in length with the line of wall face making an angle of approximately 45 deg. across the pitch. This gives a working face of approximately 700 ft. and an output of between 400 and 500 tons.

The face is worked in steps, of 6 ft. each, and generally spaced 25 to 30 ft. apart. In addition to each miner being protected from the falling coal in the skip or step above, the angle of the face prevents the break from closing the wall during the caving process. Owing to the exceptionally soft nature of the roof, sets are placed every 4 to 5 ft. apart, with three to four laggings covering the set. Each miner puts up on the average two sets per shift.

THREE VIEWS SHOWING THE ROUGH NATURE OF THE COUNTRY

Every week end the main sheet-iron chute is advanced close to the face, and the timber in the waste knocked or shot out, causing the roof to cave. At each skip two iron sheets are laid to conduct the miner's coal to the main chute.

Timber distribution is extremely simple with this class of work, the timber being brought down every night and placed close to each miner's skip. In the event of a shut-down, as the result of a strike or other cause, it is necessary to place cogs at the corner of each skip, also at the bottom of the wall close to the angle chute; the next step is to remove the sheet iron and cave the roof in the waste close up to the cogs. The wall then will remain open with little attention.

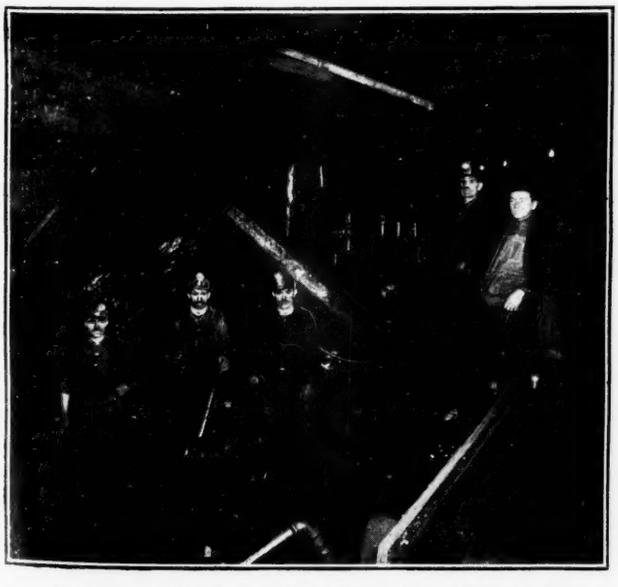
One other bed is perhaps worthy of mention. This

is the Wingate seam, which has been the subject of much discussion among mining men. This measure averages approximately 5 ft. 6 in. in thickness on a pitch, varying on the lower levels from 10 to 35 deg., and is worked on the breast-and-pillar system. The first three levels have been partly worked out and the present operations are on the fourth and fifth levels. On account of the slight grade, water is used to wash the coal down the sheet-iron chutes to the gangway.

Since this coal is of a friable nature, with a tendency to create considerable dust of a dangerous character, the water system serves two purposes—that of keeping down the dust and at the same time causing a great saving in tracks and ropes which otherwise would have to be employed to convey the coal from the working face to the gangway. From a dam in the upper levels water is conveyed by a 6-in. pipe to the working gangway. Connections are made here and the water conducted by 1½-in. pipes up to the face of each breast or pillar, where a tap is placed and a piece of hose is attached, enabling the miner to turn the stream of water in all directions. Water sprays are also placed at each crosscut nearest to the face on the intake side, facing the air current to effectually saturate the dust-laden atmosphere, thereby reducing the danger of a dust explosion to the minimum.

In the past this mine experienced considerable trouble with what the miners call "bumps," killing a few men and injuring many others. In addition to the injuries to the men, the mine in and around the vicinity of the bumps, sometimes for a considerable distance, was badly wrecked. Without the slightest warning, timber, coal and sheet iron flew in all directions, killing or maiming the miners close by. Cogs placed on opposite sides of 20-ft. breasts were discovered locked together in the center as if there had been a head-on collision; 20-ft. breasts were filled tight with coal from the opposite ribs; pillars were scattered; crosscuts closed—everywhere a mass of wreckage which often defied the fireboss in his efforts to locate himself.

These bumps, while violent, are not so extensive; that is to say, they do not cover such a large area as



A VIEW IN ONE OF THE PITCHING COAL BEDS

FOLDS AND FAULTS IN THE NORTHERN PORTION OF THE PROPERTY

do the bumps in the Crowsnest Pass. The primary causes of these bumps are undoubtedly common to both localities for, if we had no cover, we would have no bumps. The action of the bumps in the two regions, however, are entirely different.

Mining experience has been dearly bought, but, owing to changes in the methods of working at Carbonado, it is gratifying to believe the danger referred to above is eliminated, since there has been no recurrence of these disasters for several months.

Among the other troubles in connection with the working of this mine is the gas belt. Occluded gases, under heavy pressure, have been encountered in the upper levels, necessitating the stopping of the levels when the gas belt is reached. It is claimed by the older workmen that a hard formation of coal on the outside of this gas belt is encountered. Immediately this hard section is pierced the coal changes in character and blowouts of gases occur, filling the gangway for a distance of 2000 to 3000 feet.

When we stop to consider that occluded gases exist under pressure that is proportionate to the weight of the overlying strata, we can easily imagine the dangers attending the operations when approaching such a locality as that described. The removal of the coal leaves this pressure unsupported, allowing the pent-up gases to burst forth in large volume. These occluded gases, chiefly marsh gas (CH_4), are the result of coal formation and always have a tendency to escape. When, however, the strata adjacent to the coal bed are impervious to these gases we have a gaseous seam.

Approaching this gas belt, the first indication of close proximity is noticeable in the coal. Shiny streaks, with a black-lead luster, two to three inches wide appear in the bed, next the hard coal, sometimes several feet in thickness, is encountered; after penetrating this for a few feet, distant rumblings are heard, accompanied by the splitting and cracking of the coal, due, undoubtedly, to the pressure behind. To the experienced miner this is an indication of danger ahead. Shortly afterward the noise becomes more pronounced, having a decided pounding effect, similar to the report of quick-firing guns. Immediately behind this hard barrier soft coal of an oily nature, having an odor somewhat similar to kerosene and which may be easily ignited by applying a lighted match, is encountered

Up to date the company has not devised any practicable means of overcoming this difficulty. In other words, a few schemes, such as boring, etc., have been tried, without success. Neither has it been possible to accurately estimate the extent of this gas belt.

Nothing unusual or difficult has been found in the other mines, all of which, with the exception of the Douty seams, will be embraced in the consolidation scheme. It may also be of interest to mention the other progressive schemes outlined by this company.

Among the many other drawbacks encountered in coal-mining operations, the company realizes fully the importance of the labor problem. Due, possibly, to new industries springing up and other causes, the company has experienced difficulty in securing sufficient trained men to keep up the necessary work. It has waked up to the fact that in order to encourage settlers it is necessary to pay more attention to their home comforts. With this end in view, it is demolishing the old shacks, replacing them by modern plastered houses, with electric lights, hot and cold water, baths and toilets, fences, cement sidewalks, etc. In addition to this, it has erected the largest and most up-to-date wash-house in the state, built of hollow tile brick. Included in this building are the foreman's wash-house, rescue and first-aid rooms, with separate reading rooms for both miners and officials. The surroundings will be laid out in lawns and ornamental shrubs.

These, among many other improvements proposed, will eventually repay the company by encouraging a good class of married people to make this place their home. In this connection, mention should also be made of the broadminded plan to build a block of officials' homes, knowing from experience that "all is lost," as it were, without good officials. This, to my mind, is one of the most practical moves yet made. It is hard to realize anything more embarrassing and humiliating than for a foreman to find himself housed in a shack next door to, we will say, an ignorant foreigner of anarchistic or I. W. W. persuasion. Those who have been in official positions in and around mining camps, especially those who have children, will readily perceive the soundness of the company's efforts in the endeavor to encourage a good class of officials.

In conclusion, credit should also be given to the state inspectors and others for their endeavors to educate the coal-mining officials by compelling them to pass examinations. This will undoubtedly bring its reward by planting seeds which will eventually germinate into a more ambitious and intelligent class of mine officials.

THERE IS MORE to the transportation problem than moving freight from its origin to its destination with dispatch. The shipper and the receiver both play important parts. When coal operators are shipping trainloads of coal to the seaboard with no ships in sight to receive them, when manufacturers are receiving coal which they cannot store, when jobbers and speculators use cars for warehouses, they are contributing to the confusion and helping to increase the car shortage. One of the remedies for the coal shortage is well known to all those connected with the coal industry. That is, coal must be stored in the summer in excess of requirement for excess consumption in winter. This coal must be stored at the point of consumption.

Power of Coals and Gas

BY W. D. OWENS
West Pittston, Penn.

Good bituminous coal produces about 14,450 B.t.u. on combustion, while one pound of this same coal will generate 12¼ cu.ft. of combustible gas, weighing 0.045 lb. per cubic foot. One thousand cubic feet of this gas, weighing 45 lb., will develop about 1,000,000 B.t.u. of heat, but 45 lb. of coal in combustion with oxygen will only produce 14,450 x 45 = 650,250 B.t.u. Bearing this fact in mind, it would seem more economical to relieve all bituminous coal of its volatile gases and use the product for combustion. The saving from this method would seem to amount to about 54 per cent. over the best results obtained from the present practice.

The Government testing plant at St. Louis has opened the eyes of the scientific world to the merits of consuming gas instead of coal to develop power. One of the tests showed that it required 5.27 lb. of Illinois (Springfield) coal to develop one horsepower-hour, while only 1.79 lb. of the same coal converted into gas produced a horsepower-hour. Of an Indiana coal it required 4.53 lb. to produce one horsepower-hour by the steaming method, but 1.61 lb. of the same coal converted into gas developed the same power.

This discovery led to the testing of the power of lignite, which is the poorest quality of the various grades of coal. It was found that it required 10 lb. of lignite by the steaming method to produce one horsepower-hour, while but 2.82 lb. of this coal was necessary to develop one horsepower-hour by converting the same into gas. This shows a better result from lignite by 100% than is obtainable from either Illinois or Indiana coal through the steaming method.

The Geological Survey states that we have about 480 square miles underlaid with anthracite coal in Pennsylvania. This, to be sure, is a great bed of fuel, but when compared with the square miles of lignite now known to exist in the United States (omitting all bituminous coal) it is but a trifle. The same authority states that there are 246,000 square miles of these low-grade coals.

TRIP OF EMPTIES RETURNING TO MINE OF BLUE DIAMOND COAL CO., KENTUCKY

Methods of Operation

By J. F. K. BROWN
Montreal, Canada

SYNOPSIS — *The chief factor influencing the methods to be adopted in working any particular coal field or bed are the thickness of the coal, the roof conditions, prevailing custom, restrictions, embodied in the lease or deed, and the kind and quality of the labor available. Concerning some of these little can be definitely learned until a certain amount of extraction has been made.*

THE question of the proper method of mine operation is one which always gives rise to much argument and discussion. The reason of this is mainly narrow experience, failure to state all details and conditions, and generally a fatuous conservatism. The worst practical effect of such divergence of opinion is often witnessed in the development of coal fields which have not been long enough known to create or evolve methods peculiarly their own and most suitable to their particular conditions. In such cases it is often possible to find mining methods brought from one experience, one field, sometimes one mine, applied to conditions to which more mature judgment would ascribe another remedy. The policy pursued appears to be: As it was in the older country and the older district, so it must be in the new.

On the other hand, the propagation of definite and well established systems when accompanied with deliberate judgment has much to recommend it. In many cases this may save much costly experiment under unknown conditions. The North of England mining districts are probably the best examples of world-wide perpetuation of special systems, and their men the most migratory of miners. Thus it happens that in various fields scattered over the coal-producing continents the methods and even the local mining terms of the Lancashire and Yorkshire miners are in use today.

From the point of view of the investigator of a new coal area, the factors that point to and influence the method of mining which may be adopted are mainly: (a) Thickness of coal; (b) condition of the roof; (c) custom; (d) special reasons connected with the leasehold; (e) labor.

About the only point upon which there is something approaching unanimity in regard to methods of operation is that thick coals should not be mined on any other system than some method of pillar-and-chamber extraction. Thin coals, on the other hand, may be worked by either the longwall, pillar-and-chamber and entry systems.

Sound engineering backs the argument in favor of the one way of mining thick coals, since the roof of a thick coal would be liable to cause trouble so great that it could not be controlled, if left completely without support as in longwall, or if the supports are not large and properly proportioned to the thickness of the bed. The longwall method does not provide these conditions, and in the thick coals insufficient material is made in the course of mining with which any attempt could be made to pack the waste spaces left behind after the coal has been removed.

With the advent of cutting machinery and loading and conveying devices, all of which tend to increase the daily output, the limit of height beyond which longwall is not feasible, as opposed to pillar systems, has increased. Machine methods have increased the rapidity of face advance to such an extent that fresh roof is exposed practically every night. This eliminates the most frequent cause of coal-mining troubles—namely, deterioration or weathering of the roof stone in position, whereby it fails to carry the weight and do the work it did when first exposed.

As a general rule, however, when a coal bed is 4 ft. and over in thickness preference should be given in the first instance to pillar systems, provided, as already stated, no other conditions predominatingly influence the situation.

With coals below this height—and there are now few coal fields that are not already facing this problem—there is the choice of extraction methods already outlined. It is in discussing how coals of approximately this height and lower should be recovered that the greatest diversity of opinion develops. It is fortunate, however, that few if any specific considerations of the thickness of the coal with the exception of extremely thick beds really exercise a determining influence on methods of operation.

Conditions of the Roof

The importance of the roof conditions should be readily appreciated. It is important in preliminary investigation to know as much as it is possible to know about the roof in addition to the more usual and more readily acquired data on the thickness of the bed or its analysis. In many coal-mine examinations these facts are noted largely as matters of habit, there being always a tendency to pay small attention to them since the coal is after all the reason for the work being done and the object of the inquiry. But it is vitally important to remember that the best coal in any field may be worthless as a commercial proposition if it has to be worked under a bad roof.

Unfortunately it is not easy to collect data about the roof from preliminary examinations. Gathering information about the coal is a much simpler matter. Neither the roof stone nor the coal may outcrop anywhere on the ground, and furthermore an outcrop of roof rock is not always a reliable indication of what the material will be like underground, where it lies in its natural state and has not been subjected to weathering. In some cases outcrop exposure may cause improvement, in others deterioration. Boreholes do not answer the question satisfactorily, the size of the core brought up being far too small for any judgment to be formed concerning the probable action of the roof under any method of mining afterward adopted. Again, too, it is not just the rock immediately above the coal that

can rightly be termed the roof—it is the relationship between the immediately overlying rock and the succeeding strata for an indefinite distance upward that is the real factor in answering the problem of roof behavior.

The most satisfactory method of ascertaining with some measure of accuracy just what a roof may do under future working conditions is to make an actual trial extraction. Whether special or ordinary methods are followed in taking out this trial tonnage is largely immaterial because the trial period cannot commonly be extended over a long enough time to develop into a system. The mining of the small tonnage is usually enough to provide a good idea of what may be expected in the near future. Failing this, judgment is best based on the results of the boring—that is, the drill records which show the approximate thickness and relative position of the various strata over the coal. This knowledge, augmented by experience gained in the same or other fields, will lead to a fairly accurate summing up of the underground conditions as they may be expected to exist when operation has been proceeded with for a considerable distance from the outcrop and after weight begins to tell.

Cost of operation is the limiting factor anywhere, and is the only standard of measurement by which the roof conditions can be properly estimated and adjudged. It is a difficult task, however, and one not always possible, to clearly define the relative influence on costs of which each part of the mine operations is the cause. Thus it is possible to say that the cost of timbering amounts to so much per ton, but it is not so simple to say that this roof cost so much per ton.

Three Classes of Roof

For purposes of rough comparison roofs may be considered as of three classes—good, bad and medium. Bad roofs are such that no method of mining can be operated under them. Grading into the medium and finally into the good groups the advantages that one system of coal mining possesses over another become more understandable and appreciated. Thus it becomes reasonable to assume that the worse the roof the more coal will it be necessary to leave behind for support and the more surely must the operating concern make up its mind to loose in the end.

As better roof conditions are approached such large supports are no longer required, and it is easier to adopt systems that do not call for such a heavy sacrifice of valuable fuel. Finally a stage is reached in which it is possible to extract the coal in one operation and where the problem becomes one of finding proper artificial support.

Modifying these conditions are a number of minor factors, many of which are bound up with and belong to the geological periods when the coal was laid down. Of these stratification and cleavage of the roof are most important. Cleavage of any rock member of any system is developed in three directions, two vertical at right angles and the third horizontal and at right angles to the other two. This does not always apply with extreme accuracy in each case. There may be certain divisions which lie to or away from the vertical plane, but it is near enough to be taken as a general rule. Since the method of deposition and the after pressure and heat cannot always have been the same and equal in each disturbance of strata, it follows that cleavage has become more developed in one direction than in another.

Generally with sedimentary stratification the horizontal parting exhibits the greatest cleavage. This is most pronounced in rocks of fine grained texture such as some classes of shales. The two vertical partings do not so readily show cleavage and in many cases these are not apparent until after operation commences. The important consideration is that there may be between these vertical lines sufficient, if invisible difference, so that the seam is finally found to be capable of being developed and worked in one direction only. This is a feature of underground operation that can only be discovered through experience and experiment.

Complicating this, especially in regard to the horizontal cleavage, is the phenomenon of false bedding, whereby the lines of possible fracture are not parallel to the plane of the coal, but taper down to or up from the run of the coal. This creates lips, steps or edges in the roof, which naturally thicken in one direction. Here again the question of which way operation should proceed may have an important bearing on the method to be adopted, since workings passing parallel to the line of these cracks may experience frequent roof trouble while those operating at right angles thereto may be quite free from such drawbacks.

Passage of Water Along Roof

Equally important, although not so well observed or understood, is the passage of water through or along the roof. The information provided by or deduced from borehole records may not indicate these conditions in the least, because in the core the rock is brought up unweathered and from positions where naturally it has been out of contact with the air. The dangerous feature is the double effect of water and the atmosphere, and that condition only comes about when the extraction of the coal has proceeded for some time.

The double effect of water and air may go so far as to be the cause of virtually a creep in the roof although the phenomenon has not been described as such. This softness of the roof induced by such a combination often proceeds at a more rapid rate than the extraction of the coal, and thus will follow up and render unworkable a section hitherto considered quite minable. Only close study and attention to every detail will be of aid in obtaining knowledge that may be of service before mining commences.

It is of course an admitted mistake to order equipment before mining conditions have become known. Nevertheless this is often done, and underground plant is even more frequently than any other variety purchased before all the simple and primary facts about the the underground conditions of the seam have been ascertained. A considerable capital outlay is involved in underground equipment and its accessories, and to buy these before the information upon which performance can be estimated shows bad judgment.

This fault is not always that of the engineer—much more frequently it is that of a board of directors or a president whose knowledge of coal-mining conditions is of the slightest and who is so anxious to post good reports to the shareholders that he urges the imme-

diate and speedy purchase of equipment before the engineer, if there be any under such circumstances, reports upon what is really required.

Underground atmospheric conditions and the presence of gas have no great effect on the method of operation. In modern practice it is quite possible to properly ventilate almost any system of mining. However, in development these conditions have to be taken into consideration since obviously it is necessary if gas is encountered to have the ventilation designed on a more lavish scale than would be required if gas had not been present.

Custom is possibly the strongest factor in causing the selection of one system of mining over another, and quite often without any consideration of suitability. This is perhaps natural and is a trait that has to be guarded against. An engineer will almost certainly gravitate toward the system to which he has been accustomed. There is, of course, an advantage in this since men accustomed to one system of mining are better able to handle its development quickly and speedily, and undertake its more economical operation later on than those whose experience has been limited to other methods. The disadvantage is that this leaning in one direction may cause the investigator of an unknown coal bed in an undeveloped region to place entire reliance upon what he has seen in the past. He may thereby wrongly prejudice conditions. In an area which is surrounded by operating mines and which has been in operation itself for many years this danger disappears. It is economy to follow custom in this case.

Leasehold Affects Method of Operation

There are a number of conditions connected with the leasehold which may have some effect on methods of operation. For reasons given in the lease or deed of sale a certain method of operation may be prescribed either over the whole or part of the area. In some cases this is not an unreasonable stipulation, as where there are certain important bridges or buildings to be protected; but in other cases such stipulations merely hamper proper development of the field. The shape of the leasehold may also have an effect on mining methods, as may also the grade or pitch of the bed. If the pitch be heavy special methods will require to be introduced. The class of coal may likewise assert some influence and floor conditions may have to be taken into account.

Labor, strange to say, frequently exerts a potent influence on methods of mining because of the effect of custom. In general labor is highly conservative and it is always easier to obtain labor for that class of mining to which it has been long accustomed than for new methods. Thus in longwall districts labor prefers longwall mining, while in pillar districts it approves of that method and would practically refuse to man a longwall mine. Where untrained labor is available this question is not so acute. But the same trouble again arises with ignorant labor, as for example some of the black races, who balk at working under certain conditions because of some unimportant detail. Thus the noise from the working of a longwall roof was enough to ban that system in some coal-mining fields where black labor had to be used.

In general there are but few principles to be outlined as being deciding factors in the question of what method of mining should be adopted. Each case must almost certainly be judged and based on conditions that are present in each field and area and in the surrounding related conditions in the district in general. There is fortunately a vast and excellent collection of description available of methods of mining operated under an almost infinite variety of conditions and those who are in doubt upon this subject cannot do better than search the existing mining literature for details of any system which has been brought into use as a result of underground features which appear to be comparable to those under which mining is contemplated.

Some Advantages of Heat Treatment

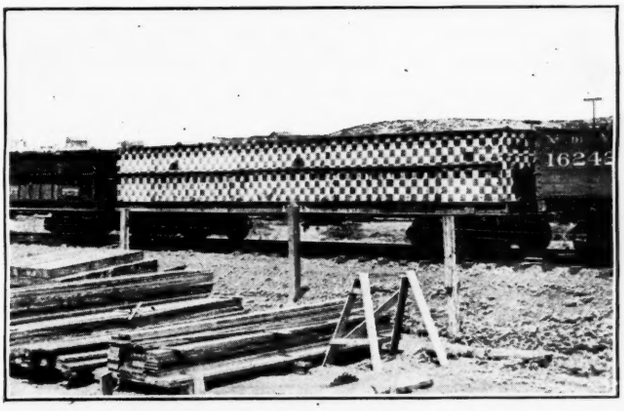
By E. A. Pearson
Kingston, Penn.

One consideration regarding equipment that is not given much thought by the average mine official is the kind of axle steel best fitted for mine-car running gears. As a general rule, this kind of material is bought from a price standpoint. No thought is given to the analysis, tensile strength or hardness of the steel. Also, few seem to realize the great advantage of using a heat-treated axle. This latter may cost a few cents a pound more than the ordinary soft steel, but it will pay for itself many times over in a short time.

By heat-treating an axle of say 0.40 to 0.50 per cent. carbon content, a tensile strength of about 125,000 lb. per square inch is secured with a hardness of about 40 on the scleroscope scale. The same analysis steel, cold rolled, gives a tensile strength of about 80,000 lb. per square inch. The advantage in using as hard a steel as possible is self-evident when the extremely hard usage of mine-car service is considered.

By using heat-treated axles, bent and broken axles may be eliminated. This item itself saves considerable blacksmith and car-labor expense. Then, again, where a heat-treated steel is used it is found that wheel hubs are not enlarged to such an extent as when a soft axle is employed. Also, the axles themselves do not wear down as much as is usually the case.

I know of one large anthracite mining operation that has been using heat-treated steel for axles for the last seven or eight years. When this company was using ordinary soft steel it sold from one to two carloads of scrap axles every year, but since using heat-treated axles it has not scrapped one car load. These axles have also shown a decided saving in shop labor.



STEEL GONDOLAS USED AS ARMORED CARS IN MEXICO
THE CHECKERBOARD EFFECT HIDES THE PORTHOLES

Scraper Mining of Thin Bed Anthracite

By E. P. HUMPHREY
Upper Lehigh, Penn.

SYNOPSIS—*Beds of anthracite less than 3 ft. in thickness and pitching less than 20 deg. are difficult to mine. The method here described—namely, loading the coal by means of a V-shaped scraper driven by power—has met with reasonable success during the past two years.*

THE mining of the small beds of anthracite has given rise to many interesting articles and discussions in *Coal Age*. It was therefore deemed worth while to tell how the Upper Lehigh Coal Co. is mining its flat small seams.

The beds being worked with scrapers vary from 16 to 48 in. in thickness and pitch from flat to about 20 deg. When pitching above 20 deg. the problem is a simple one and no scrapers are used; but when 20 deg. or less, difficulty is experienced at once in getting men to work these places, for they do not want to shovel coal several times, use a buggy, or push the coal down a chute—all of which becomes more difficult as the thickness decreases. In fact, in a 36-in. bed any of these methods become quite laborious.

The coal, excepting at the crop, is quite hard and tough. Various conditions of top and bottom have to be overcome. The top may be conglomerate, a soft slate, a soapstone or a "bony" clod. This is sometimes 16 in. thick and either comes down with the coal, forming half-and-half pieces with it, or stays up and must be taken down for safety. It can not be propped as the timbers in many cases would be in the path of the scraper. In places the coal may also be "burned" to the bottom, or a soft bottom that sometimes comes up with the coal makes it hard going for the scraper.

Everything is done to increase the production of each engine. Jackhamers, with cruciform bits, drilling about 2¼-in. holes 6 ft. deep, are used with a mounting consisting of a light metal runway with four adjustable legs. On this mounting the Jackhamer is supported. This makes the work much easier for the driller and overcomes entirely the breaking of drills due to either dropping the machine or not advancing it in a straight line on account of the operator slipping. When one considers that the driller must sometimes lie on his stomach on a pitching floor with no foothold while doing his work, it is no wonder that the pulsations of the machine push him away from the face. Besides overcoming this difficulty and making the drilling less laborious, the support practically replaces one man. By the old method the driller had to have a helper to hold the drill while starting a hole.

As a general rule the air drills are used where the coal is hard and the bed thin, say from 16 to 36 in. Sixteen inches is the lowest that this producer has mined up to this time, and as the scraper is 14 in. high it did not have enough clearance in such places to make allowances for the unevenness of the top and bottom, thus giving trouble by catching. Where the coal is 36 in. or more thick, and softer, especially near the crop, good results have been secured with the hand auger. From data kept for a comparison on this work the consumption of powder was less while the output was the same, for no other reason than that possibly with the auger there was not so much hole to fill with powder. Besides, the auger's record was helped by the softness and greater thickness of the coal. In less than 36 in. of coal the auger is out of the question.

While experimenting to find the best equipment to use for drilling this low coal a twist drill similar to a 1½-in. auger was rigged up, using an old air-driven wood-drilling machine. This worked better than expected. There

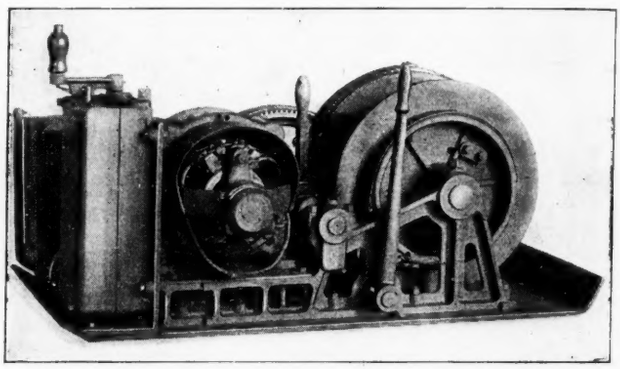


FIG. 1. SMALL HOIST USED TO DRAG THE SCRAPER

was no dust, no pulsation, practically the same weight as the Jackhamer, with no loss in the drilling speed.

An objection to an air machine is the necessity in a long breast of running up the air pipe. An electric motor-driven drill, similar in power to the one used in the experiment and built to do this work, was sought, but no manufacturers with whom correspondence was had carried anything they would care to recommend for the current available—namely, 440 volts, three-phase, 60 cycle—and for the service required. With an electric drilling machine it would be an easy matter to run a flexible armored cable up the rib of the breast.

In the beginning it was the practice to run the power lines along the gangways under an inverted wooden trough nailed to plugs driven in holes in the top rock. Three separate No. 6 weatherproof covered wires were supported by porcelain cleats. This troughing was expensive to place and maintain, was not foolproof in wet places, and the trough could not conveniently be used again. A three-wire lead-covered heavily galvanized armored cable is now used, and this gives perfect satisfaction. Of course, this cable is more expensive initially than the three separate conductors, but the cost shows that after it is used twice the expense is even. This is due to the ease with which it may be strung. Holes can be bored into the coal on the high side of the gangway, plugs driven in, and the cable hung up on hooks. It is absolutely foolproof, and when painted with a heavy oil is practically indestructible. At various convenient places junction boxes are established with switches and fuses.

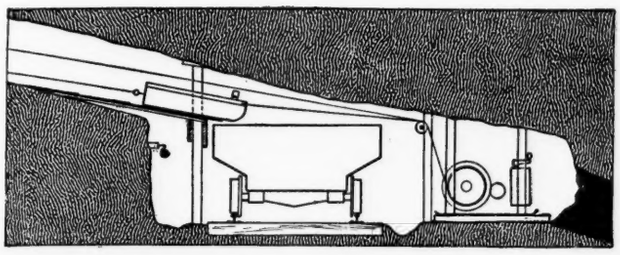


FIG. 2. ARRANGEMENT OF HOIST, CAR AND SCRAPER

The type of scraper engine used, of which eight are employed, is a double-drum machine equipped with a 5-hp. motor. These machines are made by the Pneum-electric Machine Co. and some of them have been in daily operation for nearly two years without a repair. The drums have a capacity of 900 ft. of $\frac{3}{8}$-in. or 500 ft. of $\frac{1}{2}$-in. wire rope. The lighter rope is the one normally used for both pulling and tail ropes. Experiments were made with a $\frac{1}{4}$-in. rope for the latter purpose. Overall dimensions of the engine are 44 in. wide, 38 in. long and 26 in. high. The machine weighs 1650 lb. It has been found that the power consumption averages about 100 kw.-hr. per month per engine.

The scraper is made of No. 10 sheet steel, as shown in the illustration. It is open on top about 48 in. wide in the front, and when filled holds about 8 cu.ft. of coal. In some places, where the bottom is regular, the back and side plates are riveted together, making a solid construction with a minimum leakage. Where the bottom is irregular it was found that a hinged connection between the back and the side plates gave greater freedom and allowed the scraper thus constructed to follow the bottom and not lose as much coal as a rigid one would. A chain bridle is used in the front for attaching to the pulling rope, and a ring is bolted to the back plate for the tail rope.

The scraper has no bottom, so the operation of pulling it over the top of the car empties it. An important feature for its successful operation is to have the bottom edges of the back and side plates bent inward. This keeps the scraper under the edges of the coal and stops the tendency of the device to ride over the top of the pile. The front crossbar, which keeps the scraper open, is arched or elevated to allow the lumps to enter without raising it, also to prevent pulling the big lumps back up the breast.

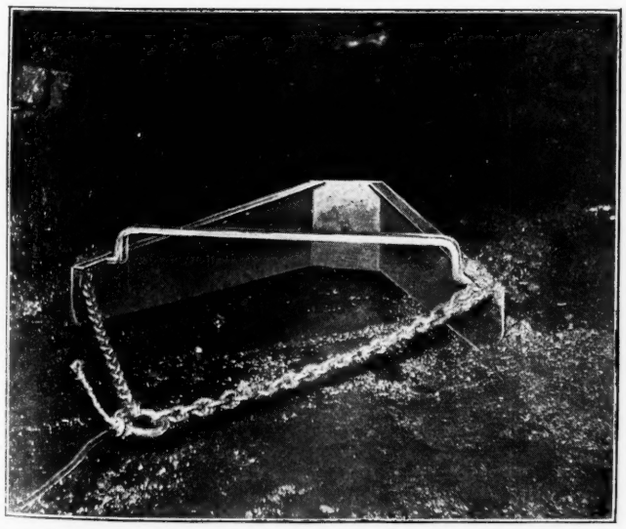


FIG. 3. THE SCRAPER IN A ROOM

Another detail which in itself is a simple one, yet of great convenience, is the use of a low lift shovel, one in which the end of the handle is about 10 in. from the bottom rock when the back of the shovel is flat on the floor. This keeps the men's hands from rubbing on the roof when shoveling.

The manipulation of this scraper is as follows: The place to be mined is first opened up about 20 to 30 ft. from the gangway and 15 to 18 ft. wide, with a place on the other side of the gangway on the center line of the breast for the engine. This is an opening generally about 5 ft. deep, 4 ft. high and 6 ft. long. The hole is made chiefly in the coal, with a little of the top shot down for headroom. The opening work in the breast is done before the preceding place is finished, so that the output is not decreased. This also removes the blasting sufficiently far from the engine, when it is in place, so that a few planks will protect it.

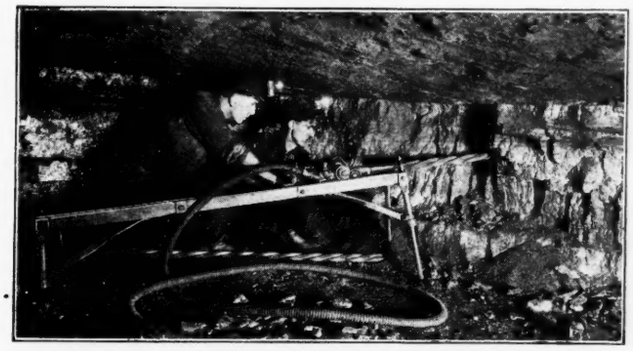


FIG. 4. METHOD OF DRILLING EMPLOYED

To move the engine a truck is placed in front of it, and, with a few skids and pipe rollers, the machine can pull itself up onto the truck. This is done by hooking one of the ropes on the old platform across the gangway. The base of the engine is made of one piece of plate with the front and rear ends turned up, and it is especially adapted for sliding around, so that if the distance is short it can be pulled along the gangway on its own base, the power being supplied to the motor by the flexible cable.

Referring to the drawing (Fig. 2), the general layout is shown. The gangways are driven 9 ft. wide and 4 ft. high on the low side. A low-type car, 41 in. in overall height with 92 cu.ft. capacity, equipped with Hyatt roller bearings, is used for the low bed. The pulleys on the crossbar in front and above the engine keep the ropes from rubbing on the cars. At the face of the breast an adjustable prop similar to a screw jack, with pointed ends upon which the top snatch block is fastened, is placed. This adjustable feature is a good thing. It allows the prop to be moved across the face, which is necessary for thorough cleaning, with the least expenditure of time and effort.

The method of mining has varied widely. If the top will permit, the breasts, when 30 ft. above the gangway, are driven 50 ft. wide. In other instances they are as narrow as 24 ft. They vary in length from 100 to 360 ft. It has been found that 200 ft.

is the limit for efficient operation on account of the time required for the scraper in moving up and down the breast. The scraper travels about 145 ft. per minute, which is the maximum speed that can be used and still maintain a nearly full load on account of the irregularities in the bottom.

Some of the places are worked with only a day crew of four men—a miner and a laborer in the breast, the engineer and one laborer on the car leveling and picking out refuse. In some cases there is no man on the car, the engineer doing the changing and leveling of the cars. The usual practice for this crew of four is to load out the coal in the morning from the previous afternoon's firing and blast their next day's coal just before leaving in the afternoon. Sometimes they fire in the morning if the coal is all loaded.

Other places use successfully, in addition to the day shift, a night shift of two men—a miner and a laborer—whose duty it is to fill the breast with coal and shovel it away from the face so that the next morning the miner can drill and the laborer load out the coal. The man on the car can often be done away with and used as a scraperman in the breast, while the miner and laborer are drilling. This is done in the places where small or 45-cu.ft. cars are used, the engineman doing the placing. Usually a trip of from four to six cars is brought in and run down one at a time to the platform and loaded.

Four Cars Per Hour Have Been Loaded

The best loading record at this time is 32 small cars per shift of eight hours. The crew consisted of the night shift of two men bringing down the coal and the day shift of four men who loaded it and fired a few shots to make more coal. The coal averaged 36 in. high and the length of the haul for the scraper was 175 ft. About 50 minutes were taken from the possible loading period for the changing of the trips. The crews are all made up of "company men" on account of difficulty in getting the places worked on a contract basis.

In performing the first mining it pays to leave large pillars at least 25 ft. thick for the robbing, unless it is possible to take this all out the first time. When robbing, the engine has to be placed again, this time in a new position on the center line of the pillar, and the pillar skipped till all the coal is removed. Of course, some of the coal is lost by being shot out too far into the open breast, but this does not amount to much if the clod and other refuse are always gobbed against the outside rib when doing the first mining. This gob not only keeps the coal from scattering into the dangerous inside section, but aids in breaking off the cave when the pillar is removed. When robbing it is well to place a few light props to indicate any settling. When pillars are big enough they may successfully be robbed by driving a hole up through the center and bringing the top back through it.

The proposition of driving more than one place side by side with the one engine and using a system of snatch blocks has not proved to be successful. It means a bigger output per engine and is not impractical, so that attempts are still being made toward that end.

The section of the gangway shows the relative positions of the loading platform, the car and the engine. For the platform two light props are placed about 12 ft. apart, on which are spiked two planks at the proper height for the car. From these about five 2-in. planks about 10 ft. long are run up the breast, upon which iron sheets are placed lapping each other and parallel to the gangway. These are all nailed to the planks except the one nearest the gangway, which is arranged so that it can be pulled out to cover the gap between the car and the platform and prevent spilling. It can also be pushed back when not in use.

To aid the man in leveling the cars a common garden hoe is used, a shovel being of little value on account of the low top. To secure the engine and keep it from pulling out on the gangway four light props are wedged between the top rock and the engine bedplate. The engine is first run in on two ties, to aid in setting it up fairly level so that the motor may get oil properly.

The manner of supporting the power cable is shown, except that between the breasts the plugs are in the coal and not in the rock. The reason for carrying the cable on the high side of the gangway is to keep it from being damaged or shot down when the breasts from the lower level break through. At a platform the cable is passed under it. The lead to the engine is run over the top of the gangway.

For the past two years these methods, with slight modifications, depending upon conditions, have been used in small beds. Before adopting the present electrical equipment an air engine was used. This engine was in every respect similar to the present electric machine, except that it was driven by compressed air. The electric engines, however, proved more efficient and were consequently adopted. For the problem of mining thin beds, pitching within the limits of 0 to 20 deg. and varying in thickness, from 18 in. to 4 ft., this method of loading with a scraper is one solution.

Legal Department

Right to Use Surface—Separation of ownership of underlying coal from ownership of the surface by a grant or reservation of such coal implies grant to the owner thereof of the right to use so much of the surface as may be reasonably necessary in mining and removing the coal. (Iowa Supreme Court, Hammarstedt vs. Bakeley, 166 Northwestern Reporter, 729.)

Employer's Responsibility Under Mining Acts—In the case of Whittaker vs. Valley Camp Coal Co., 103 Atlantic Reporter, 594, in which plaintiff sued on account of injuries sustained in a mine by coming in contact with a post standing near a track while performing his duties as brakeman, the Pennsylvania Supreme Court lately quoted the following statements of law bearing upon a mine owner's liability for injury to an employee, according to whether the cause of injury may be attributed to negligence of the owner or of a statutory mine foreman: "Where the act imposes upon the mine owner a specific duty as to the arrangement and management of the mines, the mine owner cannot protect himself from liability by showing that the structure in question was put up by direction of the mine foreman, at least wherever the fact of its existence became known to the owner, but that it would be his duty to remove it; * * * on the other hand, where the act does not call for any particular arrangement or structure, the arrangement or structures ordered by the mine foreman for the purpose of supporting the roof are obligatory and he is therefore not responsible for injuries caused thereby."

Must Find a Market for Screenings

Relief must be granted in the matter of handling screenings in the territory from Indiana westward. This is becoming increasingly evident, according to advices reaching Washington. If serious loss of production is to be prevented, a market must be found for a large tonnage of screenings in the near future. The most practicable way of solving the problem, it is suggested, is to raise some of the so-called conservation orders and allow brick and tile factories, the makers of sanitary ware and such materials to operate at full time provided they will agree to use screenings. It is also suggested that many manufacturers would be glad to store screenings in considerable quantity, which would do much toward ameliorating a situation which is interfering decidedly with the production of lump coal.

President Wilson Issues Proclamation to Coal Mining Industry

Despite the handicaps which the coal-mining industry is laboring against, President Wilson believes that "sufficient coal can be mined in spite of the handicap if every one connected with the industry, from the highest official to the youngest boy, will give his best work each day for the full number of work hours." The President regards the coal situation as sufficiently serious to justify the issuance of a formal proclamation to all those engaged in coal mining. The proclamation in full follows:

The existing scarcity of coal is creating a grave danger—in fact the most serious which confronts us—and calls for prompt and vigorous action on the part of both operators and miners. Without an adequate supply our war program will be retarded; the effectiveness of our fighting forces in France will be lessened; the lives of our soldiers will be unnecessarily endangered and their hardships increased, and there will be much suffering in many homes throughout the country during the coming winter.

I am well aware that your ranks have been seriously depleted by the draft, by voluntary enlistment, and by the demands of other essential industries. This handicap can be overcome, however, and sufficient coal can be mined in spite of it, if every one connected with the industry, from the highest official to the youngest boy, will give his best work each day for the full number of work hours. The operators must be zealous as never before to bring about the highest efficiency of management, to establish the best possible working conditions, and to accord fair treatment to everybody, so that the opportunity to work at his best may be accorded every workman. The miners should report for work every day, unless prevented by unavoidable causes, and should not only stay in the mines the full time, but also see to it that they get more coal than ever before. The other workers in and about the mines should work as regularly and faithfully so that the work of the miner may not be retarded in any way. This will be especially necessary from this time forward, for your numbers may be further lessened by the draft, which will induct into the Army your fair share of those not essential to industry. Those who are drafted but who are essential will be given deferred classification and it is their patriotic duty to accept it. And it is the patriotic duty of their friends and neighbors to hold them in high regard for doing so. The only worker who deserves the condemnation of his community is the one who fails to give his best in this crisis; not the one who accepts deferred classification and works regularly and diligently to increase the coal output. A great task is to be performed. The operators and their staffs alone can not do it, nor can the mine workers alone do it; but both parties, working hand in hand with a grim determination to rid the country of its greatest obstacle to winning the war, can do it. It is with full confidence that I call upon you to assume the burden of producing an ample supply of coal. You will, I am sure, accept this burden and will successfully carry it through and in so doing you will be performing a service just as worthy as service in the trenches, and will win the applause and gratitude of the whole nation.

Railroad Mines Not to Get Preference in Car Supply

Mines owned by railroad companies are to receive no preference in car supply, according to a ruling made by A. H. Smith, regional director for the East, when an actual case came before him for decision.

Mines to Receive Essential Equipment

Through the newly created equipment section of the Fuel Administration, an arrangement has been made with the War Industries Board which is tantamount to a blanket priority order covering essential equipment for coal mines. The automatic priority does not apply to equipment for new construction or expansion. When materials are needed under those circumstances, the regular priority certificates must be used.

Inspection Leads to Large Coal Saving

A saving of coal equivalent to 350,000 tons annually already has been effected by the Fuel Administration in its conservation campaign among the steam power plants, it is stated officially. This saving has been effected through the inspection of 300 plants. It is the intention to inspect each of the 250,000 steam plants of the country. The saving is declared to be the result of applying more efficient firing and operating methods. It has been brought about without curtailment of output.

Statistical Section of Fuel Administration Doing Important Work

What is regarded as one of the most effectively organized divisions of the Fuel Administration is the statistical section. Since an enormous volume of data must be collected and tabulated, this section is conducted as systematically as a large manufacturing enterprise. All of the latest mechanical devices for punching and sorting and otherwise handling cards have been installed. The section is in charge of C. E. Lesher, who is handling this work in conjunction with his regular division of the Geological Survey, which compiles coal statistics.

Demands for Coal Continue to Increase

Demand for coal for essential uses continues to exceed estimates. This is particularly true with regard to coal from the low-volatile fields of Maryland, West Virginia and Pennsylvania and the high-volatile fields of Kentucky, West Virginia and Pennsylvania. At the beginning of the coal year the Navy's requirements were placed at 3,500,000 tons. It now is estimated that the Navy's requirements will be on a basis of 8,000,000 tons before the end of 1919. Last month the Navy's demand had risen to a 6,000,000-ton basis. On Apr. 1 it was considered that 10,000,000 tons was a liberal annual allowance for the Shipping Board. The results which have been secured in the shipbuilding program, nowever, are such that the estimate now is 13,000,000 tons.

One of the more phenomenal increases in the estimates is that for bunker coal. At the beginning of the coal year, 13,500,000 tons was assigned for this purpose, with the thought that it was liberal. The figure has now risen to 21,000,000 tons. The advanced calculation as to fuel which would be needed by new industries went decidedly awry. Adding to this the coal needed by plants that have been enlarged and the additional fuel required to keep a large percentage of industries operating on a 24-hour basis, it can be seen how the actual requirements are far in excess of the forecast.

Because the enormous consumption of the East must be met from such a limited area, the difficulties of the situation are becoming increasingly great. The mines in that limited territory are now more than 14,000,000 tons behind their schedule, due largely to difficulties of transportation.

To Demonstrate Rescue Work at Fairs

That a more general understanding may be had of rescue work at coal mine accidents, the Bureau of Mines will conduct demonstrations this year at a number of state fairs. Demonstrations of rescue work will be made possible in a glass inclosure which will be filled with smoke for that purpose. The inclosure will be elevated so that the demonstration will be visible to a large number of spectators. The fairs at which the demonstration will be given are as follows: Missouri state fair, Sedalia; Illinois Centennial state fair, Springfield; Iowa state fair and exposition, Des Moines; Kansas free fair, Topeka; Wyoming state fair, Douglas; Kansas state fair, Hutchinson; Oklahoma free state fair Muskogee; New York state fair, Syracuse.

Coal Exports During May

Exports of coal during May, 1918, as reported to the Department of Commerce, with the figures for the corresponding month of 1917, as finally revised, are as follows:

Exports	June, 1917 Tons	June, 1918 Tons
Anthracite	604,777	378,753
Bituminous	2,291,613	2,205,711
Exported to:		
Italy	58,516	.....
Canada	1,801,776	1,803,407
Panama	38,348	50,871
Mexico	12,328	13,508
Cuba	115,091	110,959
Other West Indies	33,031	25,944
Argentina	17,054	43,035
Brazil	96,040	93,782
Uruguay	2,151	48,105
Other countries	117,278	16,100
Coke	152,948	141,194

Brief Washington Notes

Using the returns from the first of the lightless nights, the Fuel Administration estimates that more than 1,000,000 tons of coal will be saved yearly. The saving in the Borough of Manhattan alone is figured at 40,000 tons a year.

Communities having conveniently at hand a supply of wood may be cut off from any supply of coal if the state fuel administrator sees fit. The attention of the state administrators has been called to the fact that the order appointing them to office contains their authority for prohibiting the sale, shipment and distribution of coal to domestic consumers.

Clay products, lime, cement and glass industries are to be inspected in the near future and rated as to efficiency in fuel consumption. An opportunity to effect savings will be made before the inspection. The furnace industries have the reputation of being profligate in the use of fuel. It is believed that several million tons can be saved by enforcing conservation.

The Secretary of War has sent the following letter to the Fuel Administrator:

I was greatly impressed when I learned recently about 150 retired miners in Mercer County, Penn., recognizing the nation's urgent need of increased fuel, had volunteered to go back to the mines and serve their country there.

This is the spirit which free and liberal government always engenders and which insures the triumphs of our arms and aims. I should like, through you, to send a personal greeting to these heroes of the pick.

Help Find This Man

Coal Age is in receipt of a request from a soldier at Camp Merritt, N. J., to help locate his father, who was a coal miner in Tennessee and left his family four years ago. His name is James A. Nelson; aged about 40; weight 180 lb.; dark complexion; with blue eyes, smooth face; height 5 ft. 11 in. He left three sons, all of them in the service at present, two being in France and one at Camp Merritt. The mother died last April. If anyone reading this notice knows where this man can be found, see that he communicates with his son, Joseph A. Nelson, of the Headquarters Company, War Risk Insurance Department, Camp Merritt, New Jersey.

THE LABOR SITUATION

EDITED BY R. DAWSON HALL

General Labor Review

The labor situation seems somewhat discouraging, partly because it has fallen into an era of recrimination instead of coöperation. There are charges and countercharges, and the industry no longer says one and the same thing. Some have spoken for temperance so forcibly that others have been prompted to deny that the miners are as a whole drunken, which of course no one has been foolish enough to affirm. Some have pointed to the revelry of those who profane the church festivals by improper observance, and in so doing have aroused the antagonism of those to whom the festivals are occasions of religious—and not riotous—celebration. Others have condemned the irregular work of the mine workers with such persistence that the mine workers have countered, charging inefficiency against the operators.

Now clearly this is no time for scolding or recrimination as against any class as a whole. Every remark should be carefully guarded with the intent to prevent too general a reference. The patriotic, temperate and conscientious men should not be offended by broad generalizations directed against a whole class, part of which, it is true, deserves criticism, but part of which is doing its utmost to serve the nation.

There are causes for the harshest of criticism. Some should be directed against certain operators and some against certain miners. The greater part of the criticism must be against the latter, partly because many are foreign and not therefore ready to support us in the war, but partly also because the needs of the hour have not been made plain to them.

But do what we will, some will be made angry. The more angry some are made the better it will be. Criticism which hits all miners alike, however, only lightens the burden for the worthless part of our personnel, which should be loaded, not with a part, but with the entire onus. Classing mine workers in a common category without any respect of persons results in antagonizing the elements by which alone our battle may best be fought.

It is the mine workers who can decree temperance, who can restrict religious observance to the daylight mass, who can require the 8-hour day, who can put their condemnation on all who go to festivals and horse fairs and on all who take their guns from the wall and hunt groundhogs and rabbits when they should be mining coal. As the mine workers "put over" the Liberty Loan, so they can "put over" the steady working day—the 48-hour week. They can and will if right leaders are chosen. But if we are going to have a quarrel as to the relative patriotism, temperance, patience, endurance and even the piety of the two elements of operation—employers and employed—then we are starting the war a-wrong and need to go unsnarling all the material with which we have to work.

There evidently has been an outpouring of energy and right-minded purpose in the coal industry, for though we have lost men the tonnage is nevertheless higher than ever. Some are keeping up the fight, though there are doubtless far more slackers than there should be. Let us be careful of vexing the patriotic men by firing volleys of abuse at the minority of slackers among them.

The man who has nothing but blame in the armory of his corrective effort is quite liable to find that it will not serve his purpose. Judicious praise in liberal measure should welcome every patriotic effort. For instance, for one man who quits a corporation to secure a refund on his Liberty Loan there are dozens who quietly pay up as the payments become due and some who pay even before they are due. It is just as easy to win out by encouraging these men as by condemning the others, and a little failure in diplomacy may anger the honest men while not rectifying the faults of the delinquents.

All this is written for the operator and his principal assistants. If by any means this review passes to the mine worker it should assume another tone. The mine worker is letting things drift. It is his duty to back the union in its fight for clean coal and contract keeping. It is the duty of every miner to advocate a new attitude toward the whole question of coal production. In the anthracite region the funeral strikes, the little fusses fostered to break the scale, the meetings to create entirely new wage rates should be insistently suppressed. The duty of the mine worker is not fulfilled if he does his personal duty and yet sympathizes covertly with those who are trying to break scales and create new conditions with the Hun in Germany and the friend of the Hun in America as principal assistants. A positive program of nationalism and production is part of the duty of every mine worker. He should not be content with his own vote in the union, he should convince his coworkers. Anything less is half-hearted patriotism.

> *THE miners should report for work every day unless prevented by unavoidable causes, and should not only stay in the mines the full time, but also see to it that they get more coal than ever before. The other workers in and about the mines should work as regularly and faithfully, so that the work of the miner may not be retarded in any way. This will be especially necessary from this time forward, for your numbers may be further lessened by the draft, which will induct into the army your fair share of those not essential to industry.*
>
> *Those who are drafted but who are essential will be given deferred classification, and it is their patriotic duty to accept it. And it is the patriotic duty of their friends and neighbors to hold them in high regard for doing so.*
>
> *The only worker who deserves the condemnation of his community is the one who fails to give his best in this crisis; not the one who accepts deferred classification and works regularly and diligently to increase the coal output.*—President Wilson, Aug. 11, 1918.

The demands of the 52 local unions of the northern district of the anthracite region, which includes Scranton and Wilkes-Barre, unreasonable as they are, are not as much to be condemned as the untruthful aspersions with which they are accompanied. It is unbelievable that any men would be found willing to assert that the "coal operators or their subordinates are restricting the output at nearly all the mines." With wages higher than at any time, with some men laying off four days at a time, how can they say also that conditions are unbearable?

Perhaps they are right when they say that now is the time to make an investigation. Perhaps now better than at any time we can find men who will not be afraid to speak plainly about matters and reveal to the world the spirit of covenant breaking which is becoming too common among the workers in the industry. The few malcontents sway the many. Most of the English-speaking miners are punctilious about their honor and the union leaders intend to keep a promise when they make it; but unfortunately there is a turbulent minority always dissatisfied, always

rebellious, which upsets agreements or tries to upset them as soon as those covenants are committed to writing.

The large shortage in car supply is again upsetting production propaganda. Again we have to say "Mine whenever the chance is given." An "if" and an "and" are again introduced into the plea for steady work and this spoils its whole effectiveness. The miner again becomes a casual hand, with all the faults which are inevitable in a casual worker. Of course this does not affect the anthracite region. There are always enough cars there, but it does spoil much good work in the bituminous regions.

Stocking of coal should start again and last till the railroads are relieved of the transit of grain. The earlier grain is moved the sooner the movement will be over, and when it is over the mine worker will have his chance. In giving out cars the possession of a stock pile should be given consideration. The mines which provide these valuable regulators of business should by all means be rewarded. If all mines stock coal, all will be on the same footing; but what a wonderful resource of coal would be provided. An embargo on other merchandise of only a few days would enable the mines to flood the country with coal, whereas that could not be done if the country were dependent on the efforts of the miners.

The note of the President to the mine workers is reproduced in full in the news section. This is an extremely welcome accession to the long list of those who are aiding in the production campaign.

Wage Competition Replaces Price War

President Frank Farrington of district 12 of the United Mine Workers of America (Illinois) is opposed to the practice of paying premiums to miners because this action stirs the men at other mines to demand more money and because the union, in agreement with the United States Fuel Administration, has bound itself to work at the present scale during the war unless the war lasts beyond Mar. 31, 1920. Farrington has protested against premiums in communications he has made not only to the local unions of his own organization, but also in those addressed to the three operators' associations in the state and in letters written to the United States Fuel Administration. He has also taken the matter up with Governor Lowden and with the state council of defense. He urges all miners to work full time and work hard and make no demand for more wages. He is also prepared to go to the limit to have the federal fuel administration close the mines where operators continue to pay premiums. Whereas Illinois formerly had a price war, the operators, having a fixed price, are now engaging in a wage competition which threatens a reduction of their profits to the vanishing point. Frank Farrington knows that profitless operation is demoralizing to the industry and causes unsafe, unhygienic and unfair mining conditions. For this reason he does not approve such unbridled competition for labor, and he opposes it furthermore because it tends to cause the mine workers to break a scale of wages to which they have set their hand.

Want An Increase of 25 per Cent.

On Aug. 5 the delegates from 52 local unions established in every mining section of the northern anthracite field from Forest City to Shickshinny, drafted resolutions demanding higher wages and a government investigation of the anthracite mines. A committee of 12 was appointed to work on a new scale of wages and other benefits. Demands were drawn up which will be presented to the operators by this committee. It is stipulated in the agreement that whatever increase is granted be dated from Aug. 1.

The miners maintain that they are entitled to an increase in wages and to a betterment of conditions because of the unprecedented rise in the cost of living. They say they are making more sacrifices than ever in order to increase the output of coal. The operators know, they say, that the miners would remain at work under any conditions to avoid a crisis next winter, and for this reason they are taking an unfair advantage of them.

The miners unanimously decided to send copies of the resolutions to the president of the district, to the international president, to the War Board, and to United States Fuel Administrator Garfield. It was also decided by the miners that they demand an answer within a month. It is intimated in the Wyoming Valley that unpleasant measures may be taken by the miners if their demands are ignored. The delegates vented no little of their discontent on their district leaders against whom considerable bitterness was exhibited, the complaint being that they had failed to sanction the meeting.

The resolutions, which were unanimously passed, are as follows:

"Whereas, the Anthracite Coal Operators through their publicity bureau and the press of the country, advertised extensively the existence of a shortage of labor and the necessity for an increase in the production of coal, and stated that, if relief were not forthcoming there would be a coal famine next winter, and

"Whereas, it appears that there has been no one willing or able to take up the mine workers' side of this great question and give it publicity, and

"Whereas, it is intimated in these articles in the press that mine workers would be responsible if a shortage of coal occurred, and

"Whereas, we believe that if a careful investigation were made in the proper manner it could be easily proven that the coal operators or their subordinates were restricting the output at nearly all the mines, and

"Whereas, conditions are imposed upon the miner daily such as reduce his earnings and make it harder for him to make a living for himself and family so that the conditions are becoming almost unbearable, and

"Whereas, the operators, knowing our patriotism and love for the cause of our great country at war and believing that we will remain at work under any conditions to avoid a national coal crisis, are taking unfair advantage of us, and imposing conditions on us, which are as bad as we had prior to 1900,

"Therefore, be it resolved, that we court a government investigation of the anthracite mines and urge that the investigation be made through the mines grievance committee, the members of which are the only persons closely connected with the mines and so equipped to know by experience the true conditions of the men in and around the mines, or else by calling together a convention at which representatives of the men in the anthracite region would be present."

The demands which the men make are as follows:

1. That the present war bonus be doubled for outside and inside day work. 2. That time and half time be paid for all overtime worked, and double time for Sundays and holidays. 3. That contract miners be granted an increase of 25 per cent above the rate of pay provided in the Washington agreement. 4. That a minimum rate of $5.50 per day shall be paid to the contract miner and $4.25 per day to miners' laborers.

Pro-German Agent Is Arrested

With the arrest of Joseph Paesterbusch, at Fleming, Ky., it is claimed that a Hun movement to tamper with the mine labor of eastern Kentucky was unearthed. It is said that this man and his associates as agents of the German Government had been endeavoring to start trouble among the miners in an effort to reduce production. As the schemes were discovered early it is not believed that any further trouble will be experienced.

C. J. Norwood, dean of the University of Kentucky, at Lexington, in discussing this matter said: "Scarcity of labor and not Hun agents will cut coal production in Kentucky this year. A large percentage of the Kentucky miners are native born, with only a sprinkling of Germans, Austrians and Italians. Most of these are naturalized, and apparently loyal. Enemy agents so far are having no effect, and the German propaganda has been wasted. Kentucky is fortunate in having a smaller percentage of foreign-born miners than the other states."

EDITORIALS

Record Would Put Blame Where Due

"CONFESSION of a fault," says the proverb, "is half amends." The record of workingmen's time proposed by the Central Pennsylvania Coal Producers' Association and reproduced as a general article last week, if filled with a due recognition of the redemptory value of a frank confession, will be a most valuable stimulant toward larger production. It shows what delays are due to bad places, lack of railroad cars, floods and fires, lack of purchased power, breakdowns, no rails in place, no timber in place, no mine cars, place not cut, lack of air and presence of water and then gives place to one inexcusable item against the mine worker—intoxication—and adds holidays and sickness, which may or may not be excusable. However, two holidays are conceded—Independence Day and Christmas. There is room for two other items. "Breakdown of street car or railroad service" might fill one of the spaces provided and "returning home early" another.

The operator's difficulties, of course, make it impossible to obtain a 100 per cent. record, such as the mine workers may, at any time, obtain and should obtain, if they are in good health and railroad-car service is satisfactory. The operator has to depend on labor supply, and the shortage of labor is hampering him. That is the sole reason for introducing these forms. In nearly every case, it will also be the reason for the failure of the operator to make a perfect score. Labor may be, and often is, to blame for the failure of the operator and the committee which will keep the record will be tempted, if not justified, in writing down "intoxication" as the cause of delay whenever a man goes home because his place is not cut when the reason it is not cut is that the man appointed to do it was intoxicated and would not cut it. There are many other similar temptations to transfer the burden of failure from the operator to the worker, for many of the delays are due indirectly to labor's failure laying labor idle. Such causes are breakdowns, undelivered timbers, mine cars not placed, air ill-distributed and water not removed.

Moreover the temptation will be increased if the man thus delayed goes home at once and makes an hour or two of excusable delay the reason for a day of inexcusable idleness. As has been said, presence at one's work for eight hours can be supplied at any time when a man is well. The mine worker really should give that attendance though it may try him severely if he finds that those who "fly off the handle" and threaten to go home or who are in the habit of leaving work before the whistle blows are given undue preference. His patriotism will also be severely tried if he discovers that when working to remove the cause of delay—pumping the water or ditching it away—he is not credited with pay for his labor.

But in any event as the record is largely a personal record the mine worker should not be credited with another's fault if he really cannot possibly make a complete record. The operator may have to stand the blame even though it is largely not his, but the fault of some human link in the chain which elects to break incontinently. The record will in any event stimulate the operator to greater efforts and analyze his failures in regularity of operation as the cost sheet has analyzed the economy with which his plant is conducted.

It will not be surprising if the record when honestly filled is a little depressing and annoying to the operator unless the committee decides to fill it out by reporting unfavorably the absences of all men who leave their places while the mine is still working or who fail to report on working days, for the shortage of labor and the lack of material and supplies makes a "bull's eye" record almost a phenomenon. Conscience unfortunately will have much to do with this report and conscience is a variable quantity.

One might have wished that "air and water"—lack of air and presence of water—had not been copulated. Lack of air is much more condemnatory than presence of water and it is well to separate these two causes, for the correction of them is quite different. Intoxication and holidays should not be combined, nor floods with fires.

If Coal Had Been Stored at the Mines

IT IS A PITY that in the early months of the year when cars were scarce more coal was not stored at the mines. Had it been done the mines could have flooded the railroads with coal when cars were plentiful.

In the first weeks of this present year less cars were furnished than last year, and yet even last year's cars in January were less numerous than the year before. Early in February the car supply of 1918 became better than in 1917, but up to the Fourth of July in most places coal could have been stocked with advantage. Unfortunately the railroads had failed so completely to meet the situation that few thought well to make preparation for the time when the railroads would be able to supply more cars than were needed to accommodate the daily output.

Should the military draft and other influences continually lessen the ability of the operators to produce coal, and should the activity of the railroads be unhampered, and both propositions seem conceivable, it is quite likely that there will, at times, be plenty of opportunity to load stocked coal. In fact it should be the customary plan during the war to stock coal whenever the mine would otherwise be idle wherever the topography makes such a practice feasible. The steady production resulting would make the practice profitable. In this way both mines and railroads would work at full blast every day, and the mines would be able to furnish assistance to the farmer even in the early summer when car supply is at its best.

Gave Their "Fourth" to the Red Cross

UNDER this head we present a poster this week commending the patriotic work of the men of the Jewell Ridge Coal Corporation, with offices in Tazewell, Va. The mines are at Jewell, Tazewell County, and the coal mine is in one of the Pocahontas measures, No. 8 to be exact. The high quality and smokeless character of the coals of the Pocahontas series fits them well for bunker purposes, and the men who mine these coals have a right to feel that they are more than usually privileged in their opportunity to back up the sailors on the ocean front.

Only a few of the men are shown in the upper picture, which does not include some of those who posed for the photographer. The group had lined itself up in front of the Y. M. C. A. building. The second illustration shows the small schoolhouse and the children merrily at play. George W. St. Clair, the secretary of the company informs us that "we have been fortunate enough to have college graduates for teachers each year." Doubtless this matter came by design and was not wholly fortuitous. The lowest illustration shows the village of Jewell, situated 500 ft. vertically above the drift mouth.

One may be pardoned for listing the names of those who have given Jewell Ridge a preëminence for civic virtue to which no mere size would entitle it. Thomas M. Righter, of Mt. Carmel, Penn., was president, but he died on July 12. George W. St. Clair has been already named in this notice. J. B. Collins, a trained industrial secretary, manages the Y. M. C. A.; J. J. Delp is superintendent and R. J. Blakenship is mine boss. These men are entitled to full credit for creating a generous and devoted spirit in the personnel of the mines.

It is only fair to add that the miners of Jewell were by no means the first to give a day to the American Red Cross. Whole districts have done this. The exceptional character of their sacrifice was the surrender of the Fourth of July to the need of their country. By celebrating that day as they did they gave twice to the cause. They gave the navy coal it could not otherwise get, and it gave the Red Cross a big boost in the financing of its gigantic program.

The One-Industry Nation

GRADUALLY the entire industry of the country is taking one trend, is being focused upon one point —that of winning the war. Steadily we have seen the steel output turned to national needs, and the products of the factories, the mines, the farms, etc., are inevitably moving in the same direction. The progress that has been made toward this end has been rapid since our entrance into the world conflict—more rapid and complete than has been that of some of our allies who have been in the war since its beginning.

We print on page 303 a résumé in abstract from the *Journal* of the British Board of Trade. This shows among other things that at the time the article was published in the *Journal* only the London district of Britain was "on coal rations." Although the coal industry was under complete governmental control, it had not as yet been found necessary to ration any portion of the country outside of the London area.

In the United States, on the other hand, the entire country is "on allowance," and it is believed that all Britain will soon be rationed also.

In the conduct of the war this country has followed closely the example of England, and will doubtless continue to do so. This country has not even yet thoroughly realized that we are at war. In England that realization is a grim and stern reality.

Britain is today prosecuting but one business—that of war-making. It is stated that all other interests are, if not forgotten, at least side-tracked and neglected. Political issues arise which in normal times would create a furore from one end of the land to the other. Today they are settled after a half-hour's debate in Parliament, and if noted at all by the average Britisher they are considered as being merely interesting side shows to the great tragedy being enacted across the channel. The one and only business that occupies the attention of the British is the conduct of the war.

The citizen of Great Britain today has less personal liberty than was enjoyed in the early days of King John before the populace of the realm demanded and received the Magna Charta—yet nobody cares, no one complains. Lloyd George exercises greater power than any monarch who ever sat upon the throne of all Britain, yet no one raises a voice of protest. As one man the English people are working with unshakable determination, full speed, full steam ahead to defeat the Hun.

And as the blue stars upon the service flags displayed from the windows of millions of American homes begin, slowly at first and then more and more rapidly, to one by one change their color to that of gold, America will gain the spirit that now pervades England and France. The time is not far off when we also as well as our allies will have but one business, but one aim, but one purpose. The sooner that time arrives the sooner will that purpose be fulfilled.

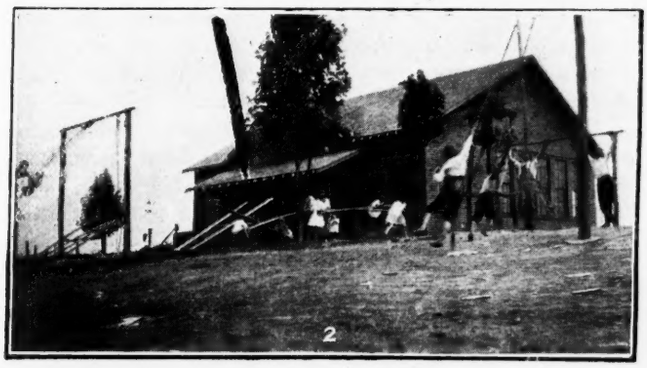
The Hand of All for the Help of All

THE war is teaching us that our ideas, our plans and our ambitions must be at least nation-wide, if not wider. The methods and mechanisms we devise are not ours, but our country's. To hold them for ourselves alone is not modesty, but meanness. The things our brain has conjured up to produce more efficiency and greater safety, good will in the industry and health for the worker, should be communicated to others for their imitation. We who want to read and absorb such ideas should be as ready to distribute what we have as we are to accept those which others have conceived.

Thus we all owe a duty not only to the industry but through the industry to the nation. On Sept. 12 *Coal Age* will have a Safety, Welfare and Convention Number in honor of the National Safety Council, which has done so much to save lives by arranging for a free exchange of ideas on safety and by stimulating safety practices in all forms of industry by cartoons and posters.

Coal Age invites its readers to send articles on safety and welfare for that issue. Its many readers cover the whole field of mining safety and mining welfare. Their devoted efforts in that work have resulted in developments of value and interest. Let us serve as the medium for their further distribution and broadcasting. All articles used are paid for at a fair rate of remuneration.

These Men gave their "Fourth" to the Red Cross



The Jewell Ridge Coal Corporation, of Jewell Ridge, Va., planned to hold a big Fourth of July celebration with a band playing and flags flying. But the miners thought it would be a waste of time and of money, and the United States wants both badly just now.

1. Some of the Jewell Ridge patriots.

2. And the coming generation at play.

3. Road their boys took for "Over There".

So they declared they would mine coal and thus help the boys on the battleships and transports. They gave all they made to the Red Cross and the company did the same. These men of the Virginian mountains, by their example, teach us all a splendid lesson.

COAL AGE

DISCUSSION BY READERS

Ventilating a Gassy Slope Mine

Letter No. 1—I have read the inquiry of "Mine Foreman," *Coal Age*, July 25, p. 191, asking for the best method of ventilating a mine opened by a slope pitching 6 per cent., when the seam is generating large quantities of gas. I heartily agree with the editorial suggestion made in the reply to this question, where it is stated that three main slopes should be driven on the full dip of the seam, the center one to be used as the main intake and haulage road, while the two side slopes serve for the main return air-courses on their respective sides of the mine.

Let me add, also, what the editor probably had in mind judging from his statement at the close, that each lift of cross-entries should be ventilated by a separate split of air to insure the best results. This should be done as early in the development of each split as possible, since it will render the entire circulation ascensional, as far as that is practicable.

In my opinion, this mine should be ventilated by a large centrifugal fan of ample size and capacity. Also, the return airways should be of good size and unobstructed. I fully endorse the suggestion, that the ventilation of the mine should be on the exhaust plan. Also, a duplicate fan should be installed for use in case of emergency, and each of these fans should be large enough to meet the requirements of the entire mine. This is important in order to avoid shutting down the mine in case of accident to the ventilator.

AIR-TIGHT STOPPINGS OF THE FIRST IMPORTANCE

Another important feature in respect to maintaining adequate ventilation is that of building air-tight stoppings throughout the mine, especially the stoppings separating the main slope from the air-courses on either side. It must be remembered that the main intake current always seeks the line of least resistance, which occurs at every leaky stopping. The result is that, where leaky stoppings exist, a large volume of air may enter and leave the mine, while the circulation at the working face is deficient.

At the first point where the air current must be split, it will be necessary to ascertain whether the natural division of the air will meet the requirements, or whether it will be necessary to build a regulator, which every practical man knows must be placed in the short split, since it is this one that will take more than its share of air unless some means is used to prevent. Sometimes when both splits are of the same length, one will take more air than the other because it runs to the rise, causing a natural air column to form in the entry.

Where the natural division of the air meets the requirements, it is evident that such a condition will prove of great advantage, since a regulator always absorbs a certain proportion of the power. We learn that a regulator placed in an airway has the same effect as increasing the length of the airway which, of course, would mean an increase of power on the air. In the development of a large mine, these points, which appear small in themselves, will frequently cause a considerable increase in the power required for the proper ventilation of the mine.

Plymouth, Penn. JOSEPH R. THOMAS.

Blasting a Ditch in a Mine

Letter No. 1—Kindly permit me to offer a suggestion in respect to the inquiry of George Smith, relating to blasting a ditch at the side of a slope road where 10 x 10-in. timber frames are set on 4 x 10-in. mudsills. It is stated that the ditch must be blasted in a hard bottom underlying the mudsills.

It is difficult to understand why the timber frames were set on mudsills, in this case, the bottom being hard. Usual mining practice is to employ mudsills only when the bottom is so soft that the legs would sink into the floor. However, accepting the proposition as it has been stated, I would suggest the following method of procedure:

Stand temporary posts under the collars of three or four sets, about 18 in. from the track, so as to allow the passage of the cars. Then take out the legs of these sets and the mudsills beneath them, which will give an opportunity to drill and blast the ditch at that point.

The holes for blasting should be drilled only to the depth required for drainage, and allowance made for a ditch 18 or 20 in. wide at the top. Care should be taken to drill the holes close together so that but a small amount of powder will be sufficient to break the rock. By this means, little or no damage will be done to the timbers.

Having completed the work under these four sets, the legs should be replaced and the temporary posts taken out. If the work has been properly planned, the mudsills can now be laid on the side of the ditch close to the rib. In the same manner another section of three or four sets can be treated and the ditch extended. I might say that where the ditch is shallow it may be practicable to use a point, made of octagon drill steel sharpened like a pick point. With this tool, it will often be possible to split up the rock, using wedges to assist the work. If this can be done it will not be necessary to use explosives, although the process will be much slower and increase the expense.

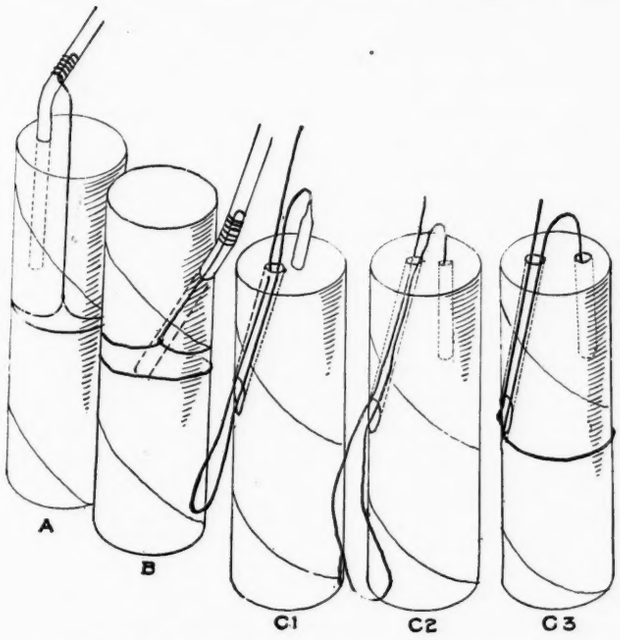
Let me say that, in my opinion, the ditch is much to be preferred to the siphon or pipe line suggested in the reply to this inquiry. It is true that the ditch would have to be cleaned, from time to time, but it would give better service and prove more permanent as a means of draining the slope, which is of the utmost importance when this is the main haulage road of the mine.

Cassidy, B. C., Canada. J. W. P.

Priming a Cartridge

Letter No. 1—I examined carefully the methods described by William Crocker, *Coal Age*, Aug. 1, p. 203, and H. J. Broughton, page 214 of the same issue, in regard to priming a cartridge. While I can agree with much that has been said by these two contributors, I would like to present the methods I have employed for this purpose, in my own work, during 25 years of practice in the blasting of rock tunnels and slopes and sinking shafts. These methods have always proved successful.

The accompanying sketch shows three arrangements, *A*, *B*, *C*, that I have employed at different times, in



SECURING THE CAP IN A PRIMER CARTRIDGE

blasting with the ordinary tape fuse, having a detonating cap crimped on the end, or when using electric detonators. The first two methods can be used in either case, but the last method is designed for electric fuse only. They are described as follows:

In the first method shown at *A*, a hole is punched in the center of the top of the cartridge, by means of a small wooden stick slightly tapered and rounded at the end. The electric detonator or the ordinary tape fuse with a blasting cap crimped on the end is inserted in this hole. As shown in the figure, the cap is made secure in the cartridge by a string tied to the fuse an inch or two above where it enters the cartridge, the other end of the string being made fast around the cartridge a short distance below the top. This prevents the strain of the fuse coming on the cap and dragging it out of the cartridge.

In the second method, as shown at *B*, the hole is punched in one side of the cartridge, running diagonally toward its center. The electric detonator or the ordinary tape fuse with cap is inserted in this hole and made secure with a string, in the same manner as described in the first method. In either of these methods, when the ordinary tape fuse is used, care must be taken that not more than ¼ in. of the fuse enters the cap, in which case there would be danger of the burning fuse igniting the dynamite, before the cap is detonated, which might prevent the detonation of the cartridge or lessen its force.

The third method, which applies to electric exploders only, is illustrated by three sketches, showing three stages of the operation. In the first stage shown at *C1*, a hole is punched near the center of the top of the cartridge and extends diagonally downward through one side. The lead wires of the fuse are now doubled back on themselves, about 18 in. from the cap. The double wire is inserted through the top of the cartridge and passed out through the side, forming a loop.

In the second stage, another hole is punched in the top of the cartridge about ½ in. from the first hole and the cap inserted into this hole, as shown at *C2*, in the figure. The third and last stage completes the operation by passing the loop formed in the wires around the cartridge and drawing them tight. In this manner the strain of the wires is prevented from coming on the cap and dislodging it from the cartridge.

Charging and Tamping the Hole

The charge and primer are now carefully inserted in the borehole and tamped with damp clay or other loose material gathered from the road, taking care to use only material that will not burn. "Bug dust" or the cuttings of machines must never be used for tamping. In any event, it is well to use a small plug of wet clay and press this gently down on the top of the primer. Then tamp gently for 8 or 10 in., using more force as the tamping proceeds to the mouth of the hole.

In closing, permit me to say that, in all my experience of 25 years, I have never heard of leaving an air space between the charge and its tamping, as suggested by Mr. Broughton and explained on page 216. In order to secure the best results in blasting, the charge should be packed in the hole so closely that no air spaces remain, which lessen the effectiveness of the expanding gaseous products. This would act in the same manner as clearance in a compressor cylinder acts to destroy the efficiency of the compressor. The firmer the tamping, the greater will be the execution of the explosive. Care must be taken not to disturb the detonator fixed in the primer when starting to tamp the hole.

Wilkes-Barre, Penn. J. P. G.

Safety in Shotfiring in Mines

Letter No. 7—To my mind, the most important feature, in connection with securing a maximum safety in the firing of shots in coal mining, is the use of electricity for that purpose. Employers of labor are recognizing, now more than ever, that it pays to protect the lives and health of their employees. It is almost impossible to step into any industrial plant of any size, without being confronted with the sign "Safety First."

In respect to safety, the method of firing shots by electricity possesses the greatest advantage over other methods. It has occurred to me that a brief description of the methods we have employed in our mines in blasting the coal would be of interest. It is well known that the coal seams of Franklin County, in this state, produce a good deal of gas. On this account, the use of black powder gave place to permissible powders long ago.

A customary charge is four sticks of the powder, although occasionally a miner will charge five sticks in a single hole. A sharp stick is used to make a hole in one of the cartridges, and a percussion cap is inserted to explode the charge. Most of the miners are using cotton-tape fuse to explode this cap, and I am only aware of one company in the county where the shots in their mines are fired by electricity.

The coal is all cut by machines, the fine cuttings and dust being loaded into a car and hauled out of the mine. According to agreement, the coal cut in each place is properly snubbed before a shot is fired in the place. The width of the room is 26 ft. Three shots are fired in each room, one center and two rib shots. The center shot is always fired first, which gives the rib shots a better chance to work.

Electric Firing in Illinois Mines

Where electric fuses are used in firing, the lead wires are 8 ft. long, which permits the ends of the wires to hang out of the hole far enough to attach the firing cable. The work of preparing and charging the shots is performed by the miners but all shots are fired by competent shotfirers after the men have left the mine.

When firing the shots, the shotfirer leaves his battery in a crosscut on the entry and drags the cable after him to the face where the shots are to be fired. The cable is of the twin type prepared especially for the purpose. The shotfirer scrapes the ends of the wires bright and, likewise, the ends of the lead wires, attaching them, in turn, to the wires of the firing cable. Having done this, he returns and connects the other ends of the cable wires with the poles of the battery.

Use and Care of Portable Hand Batteries

In the mine where I was employed there were six shotfirers, who did all the shooting for 375 or 400 loaders. The battery used was of small size, about a 6-in. cube, weighing 8 lb. The armature of this battery is operated by a spring, which must be wound up, and is held by a catch until released by pushing a button when the shot is to be fired. The battery is strong enough to explode four shots at one time if required, but care is needed to keep it in good condition. It must not be left in the mine where it would be injured by dampness and cause much trouble by frequently failing to explode the shots.

From time to time, the batteries used in blasting must be overhauled and a little oil applied to the bearings; loose connections should be tightened and the brushes cleaned and sandpapered. With proper care a battery will give good service for a long time. Some of the batteries, at the mines of the Old Ben Coal Corporation, have been in use five years, others for three years, and their use has never caused an accident. When it is considered that the No. 8 and No. 9 mines of this company, at West Frankfort, are hoisting between 8000 and 9000 tons of coal a day, some idea will be formed of the number of shots that are fired in these mines.

Briefly enumerated, the advantages of the electric firing system are: (1) The shotfirer is always in a safe place when the shot goes off. (2) There is no risk from a short fuse. (3) A possible fire started by the explosion of a shot is always detected by the shotfirer, before he leaves the place, which is not the case when the firing is done by fuse. I recall two instances when, as shotfirer, I discovered that the shots had ignited a gas feeder, which would have caused a disastrous fire if the burning gas had not been detected in time and extinguished.

SHOTFIRER.

West Frankfort, Ill.

Squibs vs. Electric Fuse

Letter No. 1—In response to the invitation to discuss the relative safety of single- and double-tape fuse, squibs, electric fuse, and electric detonators, for blasting coal, given in the reply to the inquiry by "Miner," *Coal Age*, July 20, p. 145, let me say that electric fuses and detonators are much the safest to be used, in my opinion.

My experience, derived largely in the old country, convinces me that there is greater safety in the use of any electric appliance, in place of the best quality of tape fuse, for the firing of shots in coal mining. If permitted, I will recite one or two instances to illustrate this point. In the first instance, 2 ft. of double-tape fuse continued to burn for 45 min. before setting off the charge, and in the second instance 2 hours.

Danger of Firing Shots with Tape Fuse

We were driving an incline in a 2-ft. seam of coal and lifting, on the average, 5 ft. of bottom. The explosive used was gelatin dynamite. We had encountered a large boulder of unusual hardness. With considerable effort, however, the leading miner succeeded in making a small pocket on the top of the boulder, in which he placed 150 g. (5¼ oz.) of gelatin dynamite primed with a detonating cap attached to the end of a 2-ft. length of double-tape fuse. The charge was covered with a handful of fireclay and the fuse ignited, after which we retired for lunch.

A half hour later the charge had not exploded. At that time, the foreman happened to come around and started down the incline. Believing that the fuse had gone out and fearing to warn the foreman of his possible danger, we allowed him to proceed. He had but just returned, a few minutes later, when the shot went off, much to our surprise and that of the foreman, who ordered us to report to the office that night. The foreman was so overcome by the thought of his narrow escape, that he could scarcely speak.

Another instance occurred when working on the night shift and packing a room with refuse slate and rock. A large rock had to be blasted, and a charge of 700 g. (1½ lb.) was used for that purpose. To ignite the charge the usual 2-ft. length of fuse was used. We listened in vain for the shot to go off.

Having in mind the mistakes of others in returning to a blast before it exploded, we waited a long time and then decided to put up some timbers in an adjoining place and not return to the shot. The result was that two hours later we heard the shot go off. Many accidents have come to my knowledge, caused by men returning to investigate a misfire, and practically all of these occurred in the use of a good quality of double-tape fuse.

Speaking of squibs, there are two general kinds used in the old country. First, there was what my friend

has called the "red spitter." It was the usual form of rocket squib, having a sulphur match for its ignition. This squib threw a shower of sparks into the air when the match reached the powder, and was dangerous to use in the presence of gas. What we called the "gas squib" had a match so impregnated that no flame was produced. This form was considered safe for use in gas.

In the use of tape fuse, I recall that a special igniter was employed, which consisted of a paper cartridge placed on the end of the fuse and capped with copper. Inside the cartridge was a small friction cap that produced the spark and ignited the sulphur with which it was in contact. The friction cap was exploded by a small key at the end of the cartridge. The sulphur fumes produced showed that ignition had taken place, but no sparks appeared outside the hole. The device did not prevent misfires, but as these cartridges were only carried by the shotfirers they were responsible for their use.

Let me repeat, in closing, that the safest of all means of firing shots is by the use of electricity. By means of the electric fuse, a charge of black powder can be ignited at its center, which greatly increases the execution, the charge being far more effective than when it is ignited at the top of the powder as when squibs are used. Even the best quality of triple-tape fuse will spit fire and ignite the top of the powder when the fuse has been extended to the center of the charge. Also, electric detonators do not need to be crimped, as is necessary when placing a detonating cap on the end of a fuse.

GASTON LIBIEZ.

Cedar Point, Ill.

[There appears to be some confusion in the terms applied to the different types of electric exploders. What is generally termed an "electric detonator," as has already been explained, consists of a copper cap containing a charge of high explosive, which is ignited either by an electric spark or by the heating of a platinum-wire bridge connecting the terminals of two copper wires that pass into and are secured in the cap.

The low-tension exploder uses the wire bridge to ignite the fulminate that explodes the charge, while in the high-tension exploder the fulminate is ignited by the spark passing between the wire terminals. The term "electric squib" is sometimes wrongly applied to the electric fuse, in which a paper cap is used filled with an explosive capable of igniting the charge, but causing no detonation.—Editor.]

The Miner and His Pleasure

Letter No. 1—Trusting I may be granted the privilege of explaining a statement made in my letter on "The Mining Situation," *Coal Age*, June 29, p. 1208, regarding miners owning and using automobiles, I desire to say that, in speaking of the large number of automobiles driven by miners and their frequent visits to other mining camps and towns, it was not my intention to question the right of a miner to own and operate an auto. That thought did not enter my mind.

I have been a miner, myself, long enough to know that he needs all the pleasure he can get. If he can find his pleasure in a car and has the money to buy one, no one has a better right to own and use an auto than the man who toils beneath the ground. Far be it from me to take from the miner any of the few enjoyments he has in life.

My reference to the autoing of miners was intended to emphasize the great need of increasing the production of coal at this time. My contention was then and is now that the miner should not allow pleasure to interfere with his regular work in the mine. In the present crisis, loyalty demands that pleasure must give place to work, and this does not apply to the miner alone, but to every man connected with the coal industry whether he be mine official or miner.

No one will deny that the need of an increased production of coal is pressing. It must be apparent to every observer that much time is lost by mine workers absenting themselves from the mine instead of sticking close to their work. To overcome this evil, I suggested the employment of a truant officer to hunt up men who are out of their places and ascertain the reasons for their absence. It was the best suggestion I had to make and it was my hope that others would follow with a better one. The plan is not original with me, as I have seen it tried where it worked successfully.

Result of Not Enforcing Penalty Ruling

When the ruling was first made of imposing a penalty of $1 for each day a miner was out of his place, the money to be paid to the Red Cross, we understood that it would be enforced and notices were posted to that effect. The result was that little time was lost by the miners that month. When it developed, however, as it did later, that the fines were not collected, miners again laid off and did not work regularly every day the mine was running.

Before closing, let me refer to the exception taken by Fred Hicks, in his letter, July 20, p. 144, to my statement that 90 per cent. of our men are foreign born and many of them could not read, so that all they know is what they hear. Mr. Hicks claims that 95 per cent. of the men working in the anthracite region can both read and write. I regret that such is not the case in our own locality, and am certain that my former statement is well within the mark.

It is not the fault of a foreigner that he cannot understand the English language and is unable to read or write the same, it is rather his misfortune. I have the utmost sympathy and respect for this class of workers in our mines, as many will testify who have worked for me.

However, as I remarked before, it is hard to make these men understand the seriousness of the present situation. Perhaps we are more to blame than they, for this failure on their part. There has been, however, a great change in this respect. Efforts are now being made to educate our foreign workers, and the mine boss or superintendent who does not use these men right and give them all the assistance they need is not wanted by the best companies. One of the most urgent duties of the mine foreman, today, is the education of his men, especially the foreign born, to understand what is wanted of them and to instill the principles of loyalty and true citizenship in the mind of every worker.

THOMAS HOGARTH.

Coal Run Mines, McIntyre, Penn.

INQUIRIES OF GENERAL INTEREST

Loss in Storage of Anthracite

Can you give any data, or say where to find them, regarding the loss in the storage of anthracite? Is there any diminution in weight when the coal has been dumped in a pile and allowed to remain, say a year before being used? I refer only to the natural and unavoidable shrinkage due to dusting, loss in handling several times and weathering. This information is of particular interest at present and will be greatly appreciated.

New York City. H. M. D.

The chief loss in the storage of anthracite in open piles is the loss by breakage, resulting in the degredation of the several sizes and the consequent depreciation in market value of the aggregate. As is well known, what are called the "prepared sizes" of anthracite; namely, broken, egg, stove and chestnut, command a higher price in the market than the smaller sizes of steam coal, which include pea, buckwheat, rice and barley.

Because of the breakage due to handling, the aggregate weight of the prepared sizes is decreased and that of the smaller sizes increased, in storage. The loss of weight, due to weathering, is practically inappreciable, in a limited period of storage of anthracite, as has been shown in the clean-up of large storage piles of this coal.

In an interesting and valuable paper prepared by R. V. Norris, consulting engineer, Wilkes-Barre, Penn., and read before the Wilkes-Barre meeting of the American Institute of Mining Engineers, June, 1911, it is shown that the depreciation in market value of anthracite stored in piles, aggregates, for all sizes, 5.36c. per ton. In his paper Mr. Norris gives the following table based on 1,000,000 tons of assumed quantities of egg, stove, nut and pea, stored on the Dodge system of large open piles:

Size	Original Quantity, Tons	Price per Ton	Original Value	Quantity Shipped, Tons	Price per Ton	Final Value
Egg	350,000	$5.00	$1,750,000	300,300	$5.00	$1,501,500.00
Stove	200,000	5.00	1,000,000	219,450	5.00	1,097,250.00
Nut	200,000	5.00	1,000,000	210,480	5.00	1,052,400.00
Pea	250,000	3.25	812,500	253,240	3.25	823,030.00
Buckwheat	.....	.....	.....	7,775	2.50	19,437.50
Rice, Barley	.....	.....	.....	8,755	1.75	15,321.25
Totals	1,000,000	.....	$4,562,500	1,000,000	.....	$4,508,938.75

Loss, $53,561.25, or 5.36c. per ton.

In the same paper, Mr. Norris shows that the loss by breakage of the coal when stored in bins or pockets, is far greater than when stored in open piles. In an estimate based on 1,000,000 tons of assumed quantities of broken, egg, stove, nut and pea, he shows that the depreciation in market value was found to reach 54.5c. per ton. The following table, presented by Mr. Norris, was prepared from several tests, although not representing average conditions, owing to the pockets not being filled in any instance, thus causing a greater drop and somewhat increasing the average breakage above what would occur when the pockets are completely filled:

Size	Original Quantity, Tons	Price per Ton	Original Value	Quantity Shipped, Tons	Price per Ton	Final Value
Broken	130,000	$4.75	$617,000	96,040	$4.75	$456,190.00
Egg	225,000	5.00	1,125,000	191,770	5.00	958,850.00
Stove	195,000	5.00	975,000	192,410	5.00	962,050.00
Nut	200,000	5.00	1,000,000	215,040	5.00	1,075,200.00
Pea	250,000	3.25	812,500	248,630	3.25	808,047.50
Buckwheat	.....	.....	.....	35,515	2.50	88,787.50
Rice, Barley	.....	.....	.....	20,595	1.75	36,041.25
Totals	1,000,000	.....	$4,530,000	1,000,000	.....	$3,985,166.25

Loss: $544,833.75, or 54.5c. per ton.

Mr. Norris draws attention to the fact that the cost of handing each way, including labor, repairs to equipment and supplies, but making no allowance for taxes, interest on investment and depreciation, will vary greatly owing to periods of inactivity when fixed charges continue in force. The tabulation, however, is suggestive and valuable.

Natural Mine Ventilation

The following question asked in a recent examination has puzzled me and others. Can it be answered in two ways? A mine has two openings, one 150 ft. higher than the other, at the surface. The outside temperature being 60 deg. F. and the inside temperature 40 deg. F., in what direction will the current flow and why?

Shamokin, Penn. ASSISTANT FOREMAN.

The correspondent does not state whether the seam is flat or has an inclination and, in replying, it must be assumed that the temperature throughout the mine and the shafts is 40 deg. F. On this assumption, the air in the upper part of the deeper shaft would be cooler than the outside air. The upper 150 ft. of air column in the deep shaft would then outweigh the corresponding 150 ft. of atmospheric column above the shallow shaft, while the remaining shaft and atmospheric columns balance each other. The result is that a downcast current is formed in the deeper shaft and an upcast in the shallow shaft.

However, in practice, the pressure due to these air columns cannot be estimated on such assumed temperatures, since the temperature of the air entering the deeper downcast shaft will be greatly modified by reason of its higher temperature in the atmosphere before entering the shaft.

While the average temperature of the upcast air, in the shallow shaft, can be assumed as 40 deg. F., the average temperature of the downcast air in the deeper shaft will be somewhat higher, depending on the depth of the shaft. This will have the effect to reduce the effective air column producing the circulation. The problem is further modified by the fact that the second opening may be a drift, instead of a shallow shaft. This would reduce to a minimum the counteracting effect of the increase of temperature in the downcast air caused by the warm air entering that shaft.

EXAMINATION QUESTIONS

Mine Foremen's Examination, Shamokin, Penn., Apr. 23, 1918

(Selected Questions)

***Ques.*—What precautionary measures would you take with the abandoned portion of a mine in operation?**

Ans.—The Anthracite Mine Law of Pennsylvania requires that all abandoned parts of a mine in operation shall be, as far as practicable, kept free from accumulations of dangerous gases and water, or the inspector of the district notified when it is found impracticable to do this. General practice has been to ventilate all abandoned portions with a sufficient air current to prevent the accumulation of gas, or to seal off such abandoned places by building air-tight stoppings. When abandoning any portion of a mine permanently, all track material and other equipment should be removed and timber withdrawn, for use in other places.

Ques.—In case of a squeeze occurring in a mine under your charge, at what stage of its progress would you consider yourself justified in stopping operations and withdrawing the workmen?

Ans.—When there is plain evidence that a squeeze has started in a certain section of the mine, safety would require that the men working at the face in that section should be withdrawn promptly and not permitted to return to their working places until the mine is again quiet. During the progress of a squeeze there is danger of loose pieces of slate or rock falling at the face. Sections of the roof that would otherwise be safe may suddenly be loosened and fall, during the progress of a squeeze. At such times, little warning is given by the falling roof. Only competent men should be employed to do what they can to arrest the progress of a squeeze by drawing timber in certain standing areas that have been abandoned and working back pillars in other sections of the mine that are as yet unaffected by the squeeze. Every reasonable effort should be made to start a heavy roof fall, in adjoining sections, so as to relieve the pressure on the pillars in those sections of the mine affected by the squeeze.

Ques.—When the water gage is 1.85 of an inch, what pressure per square foot does it indicate?

Ans.—Each inch of water gage corresponds to a pressure of 5.2 lb. per sq.ft. in the airway at the point where the gage reading is taken. A water gage of 1.85 in., therefore, corresponds to a pressure of $1.85 \times 5.2 = 9.62$ lb. per sq.ft.

Ques.—In driving a gangway in the Mammoth vein, the coal being of a bursting nature, timbers are set 5 ft. apart; what precaution would you take in making room for the next set of timber?

Ans.—Besides setting the usual temporary posts for the protection of timbermen when putting the next timber-frame in place, means should be taken to support the side pressure on the ribs and prevent the bursting out of the coal, until the required lagging can be placed behind the timbers. For this purpose forepoling or a system of temporary lagging should be employed. Where the roof is frail it should also be supported by forepoling.

Ques.—What method of ventilation reduces the danger of explosion, also friction?

Ans.—Splitting the air current as often and as quickly as the development of the entries will warrant affords a better control of the ventilation in each section of the mine, reduces the velocity of the air at the working face, provides fresh air in each section and conducts the gases generated therein directly into the return current, thereby reducing the liability to an explosion. The reduced velocity, also, greatly lessens the friction.

Ques.—The anemometer makes 275 r.p.m., in an airway that measures 7 ft. 4 in. at the top, 11 ft. 11 in. at the bottom, and is 7 ft. 6 in. high; what quantity of air is passing?

Ans.—The average width of this airway is the half-sum of the top and bottom widths, which is 9 ft. 7½ in., or 9.625 ft. The sectional area of the airway is, therefore, $9.625 \times 7.5 =$ say 72 sq.ft. Taking the speed of the anemometer indicated by the dial, as the average velocity of the air current, the quantity of air passing in this airway is $72 \times 275 = 19{,}800$ cu.ft. per min.

Ques.—Which should be the largest, the inlet or the outlet airway, in a mine, and why?

Ans.—Considering the ventilation only, the return airway of the mine should have a larger sectional area than the intake, for several reasons: (1) There is always more or less gas generated in a mine, which increases the volume of the return air current. (2) Almost without exception, the temperature of the return current is higher than that of the intake, which expands the volume of the return air, making it larger than that of the intake current. (3) Since air flows from a point of higher pressure to a point of lower pressure, it follows that the return current is subject to a less pressure than that of the intake. This reduction of pressure on the return airway acts to increase the volume on the return current, which is true whether the fan is blowing or exhausting.

It may be important to consider other practical questions relating to the working of the mine, in deciding the relative size of the intake and return airways. For example, in a gaseous mine where the haulage is generally performed on the intake airway and men are compelled to travel on this road in passing in and out of the mine, safety requires that a good clearance should be provided at the side of the track to enable the men to pass the cars with safety. This consideration may require a larger sectional area on the intake than is necessary in the return airway. Also, the movement of the cars, and especially that of the loaded trip passing out of the mine, offers considerable obstruction to the air current, and this consideration, again, may require a larger sectional area for the intake airway.

COAL AND COKE NEWS

What Happened in July

[The bracketed figures in the text refer to pages in the present volume, reference to which will give fuller information regarding the matters discussed in the item to which the bracketed figures are attached.]

July 1—New prices are set for coal delivered in Cook County, Ill. (Chicago)—John S. Wentz, one of the principal stockholders in the Wentz Coal and Iron Co., Wentz Corporation, Upper Lehigh Coal Co., Maryd Coal Co., Midvalley Coal Co., and J. S. Wentz Coal Co. dies at Philadelphia [84]—Strike ends at Tuxhorn mine, Springfield, Ill., where negroes and foreigners had clashed [71].

July 2—Henry F. Shoemaker, a leading coal operator in Ohio dies in New York City—The Fuel Administration adds 25 inspectors to its staff to watch the preparation of bunker coal [22].

July 3—Viscount Rhondda, formerly David A. Thomas, British Food Controller dies. Lord Rhondda, as D. A. Thomas, was closely bound up with the development of the South Wales coal fields and it was expected at one time that he would become a large owner of West Virginia coal lands and collieries [66]—Fuel Administration prohibits the distribution of gas coal from docks on Lake Michigan or Lake Superior without permission, except to persons engaged in the manufacture of gas or in the operation of byproduct plants—The Fuel Administration issues a regulation reducing the coal supply of the breweries to 50 per cent. of that used in the past three calendar years [67]—Eugene C. Eppley appointed head of hotel section of the Conservation Bureau of the United States Fuel Administration [67].

July 4—Jewell Ridge Coal Corporation and mine workers donate to American Red Cross all the coal mined on this day [70]—Supply of cars to the Huntingdon and Broad Top R.R. is reduced 50 per cent.

July 5—Fuel Administration defines "modified mine run"—mine run from which large sizes are removed—and provides prices for same ranging from 40 to 90 per cent. of the difference in price between run of mine and screened coal above the price of the former [67]—Telegrams sent to 750 retailers threatening to cut off coal supply if reports were not furnished weekly [68, 178]—Inquiry by Board into the operation of high-cost mines in Central Pennsylvania.

July 6—Anthracite Tridistrict Board asks for a higher wage scale to meet increased cost of living [79]—Agreement to compensate the owners of undermined and wrecked buildings is made in Wilkes-Barre, Penn., binding certain coal companies and not binding the city. It provides compensation to owners of properties on the assessed valuation of the property up to $5000, and provides a $100,000 compensation fund. Owners of properties undermined are to be notified, to be compensated in full for moving expenses and to be remunerated in full for rental of new premises—Department of Labor refuses to permit the importation of Mexican labor to mines in New Mexico [70]—New classification for Ohio is issued dividing state into eight producing districts and providing rates for each division [67]—Fuel Administration orders that the amount of coal furnished to domestic users shall not exceed quantity necessary to heat every room up to 68 deg. Fahr. using scientific and conservational methods [68].

July 7—The War Labor Policies Board announces the establishment of Community Labor Boards to mobilize labor [70, 71].

July 8—Bill reported to Senate forbidding the manufacture of beer, wine and other intoxicating malt or vinous liquors for beverage purposes after Nov. 1 and all sale of such liquors or of distilled spirits after Dec. 31 except for export—Department of Labor limits work of United States Employment Service to manufacturers of war material employing over 100 workers and declares itself willing to permit the engaging of men where service is not directly or indirectly solicited [71]—Members of the Anthracite Conciliation Board directs that in case of the funeral of the victim of a mine accident the company owning the mine shall pay an additional $150 to the compensation provided by the compensation law provided that no men lay idle on that day except the members of the immediate family and six other men, the abstention of whom will not cripple the colliery. The six men will be chosen by the mine foreman and grievance committee. Their wages will be paid by the company [131, 227]—Order is issued by Fuel Administration fixing prices of crushed and screened coke and breeze from byproduct and beehive ovens, on beehive coke in Utah and on gas coke [68]—United States Fuel Administration sets prices for charcoal [68]—Furnace Run tipple and retarding conveyor of the Allegheny River Mining Co., near Kittanning, Penn., is burned down [148]—Battery of 80 Koppers byproduct ovens is charged for the first time by Bethlehem Steel Co., Steelton, Penn. [193].

July 10—Thirteen men burned in an explosion of gas at the Lackawanna colliery of the Delaware and Hudson Co. [148]—Preferential supply of coal cars to mines producing railroad fuel is discontinued—U. S. Fuel Administration announces that brewers can only count on receiving enough coal to complete the manufacture of beer from materials now in process of manufacture [134].

July 11—A. H. Smith, Regional Director of Railroads, issues order to speed railroad coal cars declaring that production had declined since June 15 owing to decreased car supply [133].

July 12—The National Coal Association with a membership producing annually 400,000 tons of bituminous coal declares in favor of immediate prohibition [136]—James B. Neale, Director of Production, U. S. Fuel Administration, addresses coal operators at Fairmont, W. Va., urging that operators and directors of companies spend their time at the mines speeding up production [229]—Organization meeting of Northern West Virginia Coal Operators Association held at Fairmont in which operators in an area embracing 12¾ counties participated [147]—Thomas R. Brown, administrative engineer for Fuel Administration announces that a saving of coal equal to 81,000 tons annually has been effected in Pittsburgh plants by efficiency methods. A national saving of 25,000,000 to 30,000,000 tons is forecast in the 250,000 industrial plants of the country. One firm had a plant with only 59 per cent. efficiency.

July 13—Fuel Administration prescribes that country clubs may without a permit use wood or peat if railroad services are not utilized, but must obtain permits for the use of any other fuel [133]—Production of bituminous coal in the week just ended reaches 13,243,000 tons, the largest weekly production thus far attained in this or any year [180, 185, 196]—Harleigh-Brookwood coal breaker near Hazelton, Penn., is burned down [193].

July 16—Greenwood Colliery of Delaware & Hudson Co. is closed by a strike for higher pay to miners. (Strike ends on July 20) [180]—G. B. Markle Coal Co. puts its new breaker at Oakdale in operation [193]—Fanhouse of Lehigh & Wilkes Barre Coal Co. at Tresckow destroyed by fire [193].

July 17—John W. Moore, of Columbus, Ohio, has his distributor's license revoked, and the Elk Coal Co. doing business illegally under his license is required to refund commissions collected by it upon transactions carried on under the license issued to J. W. Moore [178]—Explosion of powder magazine of Black Brothers' Coal Co., Blackfield, Penn., kills one man and injures a dozen others [194].

July 18—Fuel Administration prohibits all persons owning or operating a dock on Lake Michigan or Lake Superior from selling, shipping, delivering, or distributing smokeless coal received at any such dock from the New River, Pocahontas, Tug River and other low-volatile smokeless coal fields for any other purpose than making illuminating gas, byproduct coke or coal briquettes or for special purposes as may be designated by the Fuel Administration under special permits—Fuel Administration expresses disapproval of carnivals and like gaieties in coal-mining regions [160, 276]—Coal cut off 70 coal dealers who were remiss in filing weekly reports [68, 178].

July 19—War Labor Policies Board announces that the Department of Labor will enforce a ruling that no contractor shall directly or indirectly employ children under 14 years in the performance of a contract for the Government nor shall he permit any child between 14 and 16 years to work more than 8 hours in any one day, more than 6 days in any one week or before 6 a.m. or after 7 p.m.—Fuel Administration provides that in Michigan, Ohio, Indiana and Illinois, where the allotment of anthracite for the current year has been materially curtailed, domestic anthracite sizes should be distributed first to those communities within the state which would experience the greatest inconvenience, difficulty and suffering by a failure of the supply expected [79]—Fuel Administration formulates orders for a reduction in outdoor lighting. This order is commonly referred to as the "Lightless Nights" order [178].

July 20—New order made by Fuel Administration revising former orders relative to required quality and grades of coal for bunkering steamships at Atlantic and Gulf ports [225].

July 21—German submarine sinks three coal barges and sets fire to the tug pulling them. This action took place near Cape Cod on returning from a trip with coal to Gloucester, Mass.

July 22—District draft appeal board at Scranton declares that mine clerks and stenographers are not essential workers [239, 227].

July 23—President Wilson by proclamation announces that on July 31 the Government will take over the telephones and telegraphs—President declares by proclamation that he will assume control of the Cape Cod canal July 25, and directs the Railroad Administration to operate it. It is the intention to safeguard the transit of coal to New England by the use of the canal which will be deepened to a depth of 25 ft.—D. W. Cooke, vice president, Erie R.R., appointed fuel administrator for New York State to replace Albert H. Wiggin, resigned—Fuel Administration appoints a Bureau of Labor, comprising John P. White and Rembrandt Peale, to administer coal mining labor disputes subject to the Administration and in accordance with a series of specified principles of practice [228]—Major Stuart, of Huntington, W. Va., in charge of recruiting in West Virginia, told not to take mine workers [229]—Strikes at 14 mines in Michigan for an increase of 10c. per ton in the rate for coal mining [277].

July 24—Fuel Administration announces that 150 coal miners at Mercer, Penn., have returned to work after several years of retirement [227]—Coal for lake transportation to be given preference over all coal except railroad coal, byproduct coal and coal for illuminating gas [226]—New "Lightless Nights" order of July 19 becomes operative [178].

July 25—Fuel Administration puts maximum price of domestic coke f.o.b. cars where produced at $1 less than maximum Government price for selected foundry coke f.o.b. cars at the same point [226]—Conference between representatives of Fuel Administration and the smokeless coal operators of West Virginia to adjust standard of prices [226]—Prices are set for coal at all Nova Scotia operations by C. A. Magrath, Fuel Controller of Canada.

July 26—Frank J. Hayes, president United Mine Workers of America, completes a tour of the anthracite region made for the purpose of speeding production—Fuel Administration appoints Roy A. Rainey, of New York, and David D. Bush, of Chicago, to the Production Bureau in charge of priorities in mine supplies to work in conjunction with War Industries Board [226].

July 29—Order in Council in Canada gives railroads the right to file increases in tariff rates of 20 per cent. in transatlantic traffic on Aug. 1, to come into effect Aug. 12, and to remain in force to close of war—Scranton surface Protective Association declares mine-cave agreement unacceptable—John R. Powell, pioneer "squib" manufacturer dies at Plymouth, Penn. [290].

July 30—New prices are made for wagon coal at mine and delivered in Pittsburgh, Penn. [274, 275].

Harrisburg, Penn.

Coal production in the Central Pennsylvania field for the week ending July 20 totalled 1,282,000 tons, 89,390 tons less than the estimated full-time tonnage for the mines reporting. The loss attributed to car shortage was 20,821 tons, and the loss due to labor shortage was 51,980 tons. The week's production was 78,000 tons less than the week before.

R. W. Gardner was appointed production manager of the United States Fuel Administration of the Pittsburgh district on Aug. 6, to fill the place made vacant by the resignation of O. A. Blackburn. Mr. Gardner says that steps will be taken whereby the production will be increased by 15 to 20 per cent. This will mean an added tonnage of 30 or 40 tons each day. He said: "We are planning to have a committee of six at each mine. Three of these men will be chosen by the operators and a like number by the miners. Each committee will report every week to the production manager. Thus we will be able to discover the shortcomings of either the men or their employees."

The coal operators have agreed to pay the salaries in the production manager's office. The Government will furnish the funds for the office rent and furniture.

Inspection of boiler on steam dredge taking coal from navigable streams of Pennsylvania is outside of the scope of the authority of the Department of Labor because such dredges have the status of other steam vessels navigating the streams of the State, holds Deputy Attorney General Emerson Collins.

Uniontown, Penn.

Step by step, the Connellsville coke region is being geared up to war-time efficiency. The last few weeks has seen several orders of a rather drastic nature promulgated by the Fuel Administration and compliance with those regulations has resulted in a steady although not extensive increase in production despite the prevalence of hot weather, which is ordinarily a factor to contend with on the coke yards. There was a discouraging slump in both the coal and coke output for the week of July 20, but for the week ending July 27 production again showed a marked increase, the coal output being 171,293 tons or a gain of 10,153 tons over the previous week and a gain of 29,169 tons over the corresponding week in June, while the coke output was given as 348,180 tons. These figures were issued from the local Fuel Administration office.

Meantime the elaborate and rather complicated labor supervising system is being rounded into shape and its effects are already felt. There is a noticeable tightening up of labor throughout the region, the personal letters directed by the Fuel Administration to labor slackers usually being sufficient to bring them into line. To add further to the effectiveness of that system there is now being considered the appointment of a production manager at every plant, whose business it will be to see that the men stay on the job.

There was little grumbling among the workers because coal company employees were not included in the recent 10 per cent. wage advance given certain munitions employees of the United States Steel Corporation. The men are now making more money than they ever made before in their lives and seem contented as far as wages go. A notable instance of big pay envelopes was at the Adelaide plant of the H. C. Frick Coke Co., where Joseph Malachick drew $158.34 last week for two weeks' work. His pay for the last four weeks was $300.96.

The maximum price fixed for screened coke by the U. S. Fuel Administration is considered favorable by the operators engaged in salvaging coke breeze from ash dumps, an industry which has reached some proportion in the Connellsville region. As applied to this region the order means that cleanly screened coke from ash dumps which can be used as domestic fuel can be sold at a maximum of $6 whether it is shipped for domestic use or not. If it is sized coke over ¾ in. it will bring a maximum of $7.30, and under ¾ in. a maximum of $5. The $6 price applies to all sizes mixed together if the coke is large enough for domestic use.

Charleston, W. Va.

Climatic conditions and a light car supply are believed to have had a marked effect on coal production in West Virginia this week. The supply in many districts seemed to be much lighter than usual, and this scarcity seemed to be more or less uniform throughout the state. Seeking for a cause for such a condition it was learned that districts in other states having fallen behind in their supply last month, an effort was now being made to help them catch up. The intense heat of last week has been such in all the coal fields that it was almost beyond human endurance, and consequently there was a marked decline in the number of men reporting for work.

Last week, laboring under high pressure to meet Government requirements, the mines of the Fairmont district produced coal in such quantities that it threatened a serious congestion at many division points on the Baltimore and Ohio Ry. During the current week, however, the supply has been exceedingly light. Monday the car supply in the Fairmont district was exceedingly small, being 1376 cars—something like 400 under requirements. On Tuesday cars were even more scarce, there being only 1051 in the region. Team back operators in the Fairmont region were hard hit by the issuance of an order prohibiting the shipment of coal loaded in box cars to New England points. As an order already in effect prohibits westbound shipments of the same nature, the snow-bird mines have only a limited field to which to ship. An effort is being made to have the new order changed or canceled, as production will be to some extent affected unless it is rescinded or altered.

Production in the Kanawha District underwent a slight decrease last week as compared with the last week in the month, the production for the week being 216,528 tons, a decrease of about 3500 as compared with the previous week, this decrease being due to labor shortage and to mine disabilities largely, though this week the car supply is only running about 80 per cent. of requirements. The present slight shortage is not regarded as being permanent.

Coal production in the Guyan field was brisk during July, more than a million tons being loaded. It is felt, however, that had the railroad service been a little better and had men remained steadily at work there would have been a production of at least 1,500,000 tons.

Production is being slowly increased in the Pocahontas and Tug River fields, but the operations in those regions have been hard put to get a sufficient number of men to man the mines there. However, since a recent production campaign waged in that district miners are applying themselves more assiduously to mining; and though the draft has made inroads on the industry, greater regularity in reporting for work has to some extent helped keep up and in fact increase production.

Fairmont, W. Va.

Final steps were taken here last Saturday to complete the organization of the Northern West Virginia Coal Operators' Association, begun at a large meeting held here about the middle of July.

In calling the meeting to order, R. B. Isner, chairman of the organization committee, designated C. H. Jenkins, of Fairmont, as temporary chairman and F. J. Patton as temporary secretary. As soon as the report of the organization committee had been submitted and the plan of organization ratified the board of directors chosen at the meeting unanimously elected C. H. Jenkins, formerly president of the Central West Virginia Association, as president of the new organization. R. B. Jane was elected vice president and C. J. Ryan treasurer.

As the appointment of A. B. Fleming, Jr., as director of production for Northern West Virginia had just been announced, Mr. Fleming was called upon. He told of his conference with J. B. Neale, director of production at Washington, and outlined what was hoped for in the way of production.

Temporary directors for the various subdistricts, elected at the July meeting, were made permanent directors as follows: Fairmont subdistrict—A. B. Fleming, Jr., A. C. Beeson, J. A. Clarke, Jr., Geo. E. Peddicord and C. H. Jenkins. Clarksburg subdistrict—A. L. White, D. Howard, J. M. Orr, C. J. Ryan and V. E. Goecke. Elkins subdistrict—E. D. Baker, A. C. Wadell, W. J. Williams, A. R. Miller and R. B. Isner. Morgantown subdistrict—S. D. Brady, B. M. Chaplin. Directors at large—J. M. Wolfe, of Fairmont; J. A. Jenkins, of Clarksburg, and E. Drennen, of Elkins.

Representing as it does a merger of four preëxisting associations, the new association is now said to be the largest association in the United States. The Central West Virginia was the third largest prior to the consolidation.

Herrin, Ill.

The tonnage of coal in the Williamson and Franklin field, as well as in the Harrisburg field, at mines depending upon the Central Illinois Public Service Co. for its supply of electricity, continues to show a loss of production on account of the inability of the service company to maintain current.

In the month of July the following record has been tabulated at Herrin, showing the number of times in the different days that the juice was off: July 2, off 2 times; July 3, off 5 times; July 5, off 5 times; July 10, off 3 times; July 11, off 5 times; July 15, off 4 times; July 16, off 4 times; July 17, off 6 times; July 18, off 1 time; July 22, off 5 times; July 23, off 11 times; July 24, off 1 time.

Not only are the operators vexed, but there is a growing dissatisfaction among the miners, machine men and others who work with electricity; and this may be one of the reasons why many men are leaving this field and going to mines not depending upon this current and to mines in other fields where their own current is produced locally.

Nanaimo, B. C.

The Jingle Pot mine, owned and operated by the Nanaimo and Vancouver Coal Co., which has been closed up on account of a fire in the workings for the last ten months, has been reopened again and will be in full operation in the course of two weeks, when the necessary repairs have been completed.

The Western Fuel Co.'s new shafts at the Wakeisah farm, are being rushed down at top speed. W. H. Moore, the manager, expects to have from 200 to 300 tons of coal coming from those shafts by the end of the present year. The Harewood mine, recently opened up by the same company, is getting out a record tonnage, amounting to nearly 11,000 tons daily. Albert Rowbotton has been appointed tipple foreman at this mine in place of Mr. Davis.

The Grant mine, which is situated at Nanoose Bay and owned by a local company, is producing about 150 tons of coal a day. As this is a new mine, development work is being rushed as rapidly as possible. It is only a matter of a little more time when a handsome tonnage will be obtained from this colliery.

It is currently reported in the district that the Canadian Pacific Railway Co. has leased 960 acres of coal lands in Cedar district, where borings will be commenced in the near future for coal.

PENNSYLVANIA

Anthracite

Park View—Some people, upon arising on Aug. 3, found their war gardens had been swallowed up in mine caves. The heavy rains are thought to have caused a settling of the ground.

Freeland—The employees of the J. S. Wentz Coal Co., of Hazel Brook, will hereafter be allowed street carfare one way each day they report for work and the company will add 15c. for carfare per day to each man's earnings.

Bituminous

Horatio—After being idle for more than 22 years, the Old Berwind-White Coal Mining Co. mine is again on the job producing coal. The mine was known as "Horatio" No. 2, and is being operated now by the Anita Coal Co. shipping first-class coal in paying quantities. When the mine was abandoned coal was selling at so close a margin that no operator could afford to spend much time or money to overcome faults, rolls, etc. In addition the mine was a wet one and required considerable expense in pumping out the surplus water.

WEST VIRGINIA

Roderfield—New equipment is being added to the plant of the Fall River Pocahontas Collieries plant at this place, in addition to the construction of a number of houses for miners.

Huntington—A second substation is being installed by the Algoma Coal and Coke Company at its Algoma plant. New houses for the accommodation of miners are also being built.

Big Sandy—A number of improvements have been made to the plant of the Hampton Roads Colliery Company's Big Sandy plant, consisting of 30 stucco houses for miners, a club house and bath house. A new system of sewerage has also been installed.

Clarksburg—C. S. Elliott, of Clarksburg, has sold the valuable coal tract owned by himself and his brothers to Pittsburgh capitalists for $750,000. The field purchased is located near Fayette City, Penn., and it is understood development work will be begun at once.

Welch—Coal from the Cyrus and Kimball mines of the Kimball-Pocahontas Coal Co. will be run over the same tipple. This company is building more houses to accommodate additional miners. A new 15,000-gal. water tank is also under construction. The superintendent is Mike Barron.

Bluefield—The progress being made by the Solvay Collieries Co., of which W. P. Goodman is superintendent, at its Hemphill plant is such that the company will be able to begin shipping coal by Oct. 1. The capacity of the new plant will be 2000 tons a day. Thirty stucco houses are now under construction.

Keystone—New equipment is being added to the plant of the Eureka Coal and Coke Co., of which T. W. Chambers is superintendent at Eckman. The company is also building a number of new miners' houses. The Keystone Coal and Coke Co. is erecting an up-to-date steel tipple at its plant here, under the direction of W. W. Wood, superintendent. Forty new houses are also under construction.

Gary—Additional equipment is being installed at the Elbert No. 7 mine of the United States Coal and Coke Co., where 45 new miners' houses are also being built under the direction of W. P. Kearns, superintendent. A new steel tipple has been completed at the Elbert No. 8 mine of the same company, of which J. L. Sullivan is superintendent. A number of new miners' houses will be built at this plant. It is estimated that by the time all the improvements are completed the company will be able to ship 1500 tons of coal a day.

INDIANA

Brazil—Coal miners in the Brazil territory are pleased with the action of officials of the Pennsylvania R. R. in agreeing to place in service a miners' train between Harmony and Glen Ayr to carry miners to and from their work. The train was taken off the road two years ago.

ILLINOIS

Decatur—Decatur is two and one-half to three months ahead of ordinary summer seasons in putting in its coal supply. In other words, the situation for Aug. 10 is about the same that it would ordinarily be about Oct. 10. Some of the Decatur coal dealers have contrasted their daily business this year with their usual September and October business, stating that before the war July was a month which was dull beyond all extremes.

Nokomis—The Keller Coal Co. has resumed hoisting coal in its No. 10 mine after a shutdown of over two months. The closing of the mine was due to a fire which broke out in the underground workings of the mine early in May and raged fiercely for over a week and for a time threatened the destruction of the entire mine. The mine has a hoisting capacity of over 6000 tons per day and for a long time held the state record. Over 1200 men will be employed in this mine in the future.

Carlinville—The Standard Oil Co. has had to stop work on the sinking of mine No. 2 northeast of Carlinville on account of quicksand and water which were encountered when about 100 ft. down. The abandonment of the mine is said to be only temporary, as the company expects to continue the shaft as soon as it can secure the necessary material to make the working conditions safe. In the meantime the company has commenced work on the sinking of mine No. 3 on the same tract. It was not the intention of the company to sink mine No. 3 until mine No. 2 had been completed. Work on Mine No. 4 is progressing nicely, and it will be ready for operation by Oct. 1.

UTAH

Peerless—The Peerless Coal Co., whose mine is located here, is now shipping coal. The mine is equipped with modern machinery and is expected to produce 1000 tons of coal a day. The seam being worked is over 12 ft. thick. Other seams of coal on the property will be worked eventually.

Foreign News

Victoria, B. C.—Coal mine casualties in British Columbia for April, May and June of this year were only four as compared with 39 for the same three months in 1917, according to the quarterly statement of mine fatalities issued by the Provincial Department of Mines. For the first six months of the year the deaths were six for 1918 as compared with forty for 1917. Of these six all were killed underground, three by falling roof and rock, two by mine cars and one by falling timber.

Personals

James D. Simpson is now mining manager of the Berwind-White Coal Mining Co., with headquarters at Windber, Somerset County, Pennsylvania.

L. R. Bayer, formerly with the Bureau of Standards, has joined the organization of E. & T. Fairbanks & Co., scale manufacturers, St. Johnsbury, Vt.

Alan C. Dodson, of Bethlehem, Penn., has been appointed a member of a new committee recently formed by the Fuel Administration to aid in an intensive campaign to provide for an increased production of coal.

Robert Howard has resigned his position of state coal mine inspector of Utah to accept the superintendency of the Peerless Coal Co., which has a mine at Peerless, Utah, with general offices at Salt Lake City.

John E. Williams has resigned as state fuel administrator of Illinois. He is succeeded by Raymond E. Durham, who has been serving as fuel administrator of Cook County (Chicago). Mr. Durham is vice-president of the Chicago Savings Bank and Trust Co. and is a well known and influential business man of Chicago.

John Crawford, of Helper, Utah, has been appointed by the Industrial Commission of Utah to the position of state coal mine inspector. His appointment took effect Aug. 1. Mr. Crawford has been working in and around the mines of the State of Utah for the past 20 years and has held various positions from mine foreman to superintendent during that time.

Charles O'Neill, of Altoona, Penn., has been appointed manager of the Central Pennsylvania coal district by the Fuel Administration. Mr. O'Neill will have supervision over Westmoreland, Cambria, Armstrong, Huntingdon, Somerset, Elk, Tioga, Clinton, Jefferson, Indiana, Clearfield, Cameron, Bedford, Lycoming, Blair and Centre Counties. Mr. O'Neill is secretary of the Central Pennsylvania Coal Producers' Association.

Obituary

Julius E. Bierach, sales manager at Louisville, Ky., for the St. Bernard Coal Mining Co., has passed away. Mr. Bierach started with the company 30 years ago as a weigher, later he became a salesman, and finally sales manager. At the time of his death he was 54 years of age. Death was due to a complication of diseases, following an illness of a year, a considerable portion of which was spent at St. Anthony's hospital.

Frank M. D. Watkins, assistant general sales agent of the Shawmut Coal and Coke Co., died at his home in Binghamton, N. Y., July 21, following an operation. He was 40 years old and leaves a family. He had been with the company nearly ten years and was nominally attached to the office of the general sales agent in this city. A man of the finest character and high social attainments, he was also a leader in business and will be much missed everywhere he was known.

Recent Coal and Coke Patents

Furnace Door Attachment. L. D. West, Denver, Colo., 1,267,298. May 21, 1918. Filed June 29, 1917. Serial No. 177,822.

Coal Carrier for Retorts. G. W. Traer, Chicago, Ill., 1,267,479. May 29, 1918. Filed Mar. 10, 1917. Serial No. 153,911.

Fuel Saver and Smoke Consumer. L. D. West, Denver, Colo., 1,267,295. May 21, 1918. Filed June 12, 1917. Serial No. 174,319.

Furnace Grate. A. W. Bennis, Little Hulton, Bolton, England, 1,267,172. May 21, 1918. Filed Mar. 29, 1915. Serial No. 17,858.

Coal Pit for Locomotive Tender. E. G. Bartlett, Boston, Mass., 1,267,170. May 21, 1918. Filed Sept. 26, 1917. Serial No. 193,357.

Mining Apparatus. C. J. E. Waxbom, assignor to Jeffrey Manufacturing Co., Columbus, Ohio, 1,267,943. May 28, 1918. Filed Oct. 11, 1912. Serial No. 725,322.

Trade Catalogs

Nonpareil Insulating Brick for Furnaces and Ovens. Armstrong Cork and Insulation Co., Pittsburgh, Penn. Booklet, Pp. 4; 3½ x 6 in.; illustrated. Shows the necessity of properly insulating steam lines against loss of heat, and gives data to prove that Nonpareil insulating brick saves 60 to 75 per cent. of the heat ordinarily lost by conduction and radiation.

Catalog No. 33, May, 1918. Steel City Electric Co., Pittsburgh, Penn. Pp. 108; 6 x 9 in.; illustrated. First edition of a complete catalog covering this concern's standard materials. For convenience in ordering by telegraph a code is furnished. The catalog is indexed and cross-indexed, and should prove of service to the buyers and users of Steel City Electric Co. materials.

Motor-Operated Brakes for Alternating-Current Service. Cutler-Hammer Manufacturing Co., Milwaukee, Wis. Pp. 4; 8½ x 11 in.; illustrated. Points out the application and desirable operating features of these brakes. Two installation views are included—one showing the brake applied to a large mine hoist motor, and the other to a motor-driven elevator machine. Dimensions, engineering data and the formula for determining the retarding torque required for any brake installation are also given.

New Incorporations

Kane, Penn.—The Big Level Coal Co. Capital, $25,000. To mine for coal in the Kane district. Albion Bengston is the principal incorporator.

Adah, Penn.—The Lynch Creek Coal Co. Capital, $25,000. To develop coal properties in the Adah district. R. C. Schultz is the principal incorporator.

Fairchance, Penn.—The Zebley Coal Co. Capital, $12,000. To operate coal properties in the Fairchance district. Harry Zebley is the principal incorporator.

Van Ormer, Penn.—The Beacon Coal Co. Capital $50,000. To develop coal lands in the vicinity of Van Ormer. A. N. Arthur, Evansburg, is the principal incorporator.

Coeburn, Va.—The Twin City Coal Co. Capital, $90,000. To engage in the development of coal properties near Coeburn. J. P. Lay is president and C. O. Ramsey is secretary.

Charleston, W. Va.—The Liberty Coal Mining Co. Capital, $10,000. To develop coal properties in the Charleston fields. Incorporators: J. A. Thomas, B. M. Smith and J. V. Sullivan.

Tulsa, Okla.—The Gunther City Coal Mining Co. Capital, $150,000. To engage in coal mining operations in the Gunther City section. Incorporators: E. A. Vernon and A. C. Gunther.

Fort Worth, Tex.—The Bowie Coal Mines Co. Capital, $100,000. To operate coal properties in the vicinity of Bowie. Incorporators: A. H. Woodfin and J. Murrin, Fort Worth; and W. R. Potter, Bowie.

Industrial News

Hazard, Ky.—The Midland Mining Co. has recently filed notice of an increase in its capital from $100,000 to $150,000, to provide for expansion.

Knoxville, Tenn.—The Cross Mountain Coal Co. has filed notice of an increase in its capital from $400,000 to $500,000, to provide for business extensions.

Scranton, Penn.—The Scranton Coal Co. is planning for the opening of new veins at its properties in New County. The coal will be handled at the Pine Brook colliery.

Patton, Penn.—Fire, July 18, destroyed the coal tipple of the Pennsylvania Coal and Coke Co., with estimated loss of about $30,000. It is understood that the plant will be rebuilt.

Goodwater, Ala.—The Central Railroad of Georgia, Savannah, Ga., is considering plans for the construction of a new local concrete coal chute to have a capacity of approximately 300 tons.

Indianapolis, Ind.—Retail coal dealers will have preference over manufacturing plants which are not included in the priority list prepared by the War Industries Board at Washington.

Chattanooga, Tenn.—The White Oak Coal Co., which recently filed notice of a change

in its corporate name to the Christian Coal Co., has increased its capital from $10,000 to $50,000, to provide for expansion.

Beaver Brook, Penn.—The C. M. Dodson Coal Co. is planning for the installation of a quantity of new equipment at the coal breaker at its Beaver Brook colliery to increase the present capacity of the plant.

Harrisburg, Penn.—The Buckeye Coal Co. has secured permission from the State Department of Health for the construction of a new town in Greene County, including a water-supply system, sewage-disposal plant, sewerage system, and other work.

Birmingham, Ala.—The Eagle Coal Co., recently organized, is planning for the development of about 100 acres of property at Adger. The company will install a plant to provide a daily output of about 200 tons. J. C. Maben, Jr., is president.

Hazleton, Penn.—Anthracite production in the Lehigh field was reduced by approximately 40,000 tons due to the idleness of the mines caused by a fire at the substation of the Harwood Electric Co., which supplies power for operation, on July 30.

Pineville, Ky.—The Greasy Gap Coal Co., recently incorporated with a capital of $25,000, is planning for immediate work on the development of about 480 acres of coal properties in the Wheeler district. I. Glickman is president and manager and M. Euster is vice president.

Elkhurst, W. Va.—The Elkhurst Coal Mining Co., the Thompson Block Coal Co., the Big Block Coal Co., and the Foy Splint Co., operating in the Elkhurst district, are planning for the electrification of their properties, power to be furnished by the Hartland Power Company.

Corinth, W. Va.—The Freeport Coal Co., which recently filed notice of an increase in its capital from $25,000 to $100,000, is now developing about 325 acres of coal properties in the Corinth district, with daily output of 100 tons. The company is planning for increased operations.

Joliet, Ill.—The Elgin, Joliet & Eastern R. R. has awarded contracts to the Ogle Construction Co., 28 East Jackson Boulevard, Chicago, for the construction of new coaling stations, about 20 x 20 ft., at South Chicago, Ill., and Gary, Ind. The structures will cost about $25,000 each.

Baltimore, Md.—In connection with extensions in its terminal facilities at its Bayview Junction, Md., yards, the Baltimore & Ohio R. R. has awarded a contract to the Empire Engineering Co., Curtis Bay Junction, for extensions in its coal-handling equipment, to provide for increased capacity.

Fairmont, W. Va.—Development will be undertaken in South Fairmont by the South Fairmont Coal Co., which has been formed with a capital stock of $150,000, those principally interested in the company being John W. Poling, McLough, W. H. Spedden, Carl D. Springer and E. C. Frame, all of Fairmont.

Jefferson City, Mo.—A report from the Bureau of Mines and Mine Inspection shows that in the past 18 months there were 82 fatal and 58 nonfatal mine accidents in Missouri. The mine tax law produced $27,318 since the law became effective, while the total cost of mine inspection during the 18 months was $14,102.

New York, N. Y.—Statistics just made public, show that during the month of June, there were exported from the Port of New York 6761 tons of anthracite with a valuation of $43,991 and 6807 tons of bituminous, valued at $50,751. Of the anthracite 5278 tons were sent to Canada and of the bituminous 4428 tons went to Brazil.

Henderson, Ky.—The Uniontown Coal Co., recently incorporated with a capital of $100,000, has perfected its organization, and is planning for immediate work on the development of approximately 1500 acres of coal lands in the Henderson district, to have a capacity of 500 tons daily. Clarence O. Potter, of Nashville, Tenn., is president.

Dunkirk, N. Y.—In connection with extensive improvements at the Brooks plant of the American Locomotive Co., plans have been prepared for the construction of a large new coal trestle to provide for an increase in the coaling facilities. The entire work, which includes the erection of new shop buildings, boiler plant, etc., is estimated to cost $150,000.

Zeigler, Ill.—For the first time in its 15 years of existence the town of Zeigler, founded by Joseph Leiter after his spectacular plunge in wheat some years ago, has now secured a church. The Southern Illinois Baptists have started the erecuon of a building. This is the first church the town has had. It is one of the largest strictly coal-mining towns in southern Illinois.

Huntington, Ill.—C. B. Williams, fuel administrator of Huntington County, has gone into the coal fields of southern Indiana where he will buy a reserve of coal for next winter. Nine dealers in Huntington have pledged themselves to store five carloads each for such a purpose. City officials, at a meeting held with Mr. Williams, told him that the city was not in a position to maintain a municipal coal yard.

Bristol, Va.—The Floyd Elkhorn Consolidated Collieries, recently incorporated, will acquire the properties of the Floyd Elkhorn Coal Corporation and the Drift Coal Co. in this vicinity. The new organization plans to increase the output at the works, and will install considerable new equipment, including mining machinery, mine cars, etc. A new electric power plant is also planned. The work is estimated to cost $150,000.

St. Louis, Mo.—The city of St. Louis has renewed its contract for the city institutions with the St. Clair Coal and Mining Co. and will pay $2.30 f.o.b. mines per net ton for all lump and egg, and $2.05 for 2-in. screenings. The contract covers between 200,000 and 300,000 tons of coal and is for one year. This is Standard coal, with a freight rate to St. Louis of 95c. This price is about 10c. under the price paid last year.

Duquoin, Ill.—At the recent meeting of the state and Federal mine officials in connection with the rescue station work the course of instructions in helmet work was changed from twelve to eight lessons with 10 hours for oxygen work. The course in first aid was changed to eight lessons. After passing the examination for the Bureau of Mines, the student will be examined for a state certificate by the managers of the different rescue stations.

Cincinnati, Ohio—More than half a million bushels of Kanawha River coal was brought to Cincinnati recently by a fleet of towboats and barges on the crest of an artificial wave in the Ohio River, which was started at Government Dam No. 20. Seven towboats, with 82 barges, loaded lightly because of the low water which prevailed in spite of the artificial rise, came into the harbor. Each barge carried an average of 325 tons, making approximately 25,000 tons total.

Indianapolis, Ind.—Western Kentucky coal will not be moved into Indiana and Illinois. The fuel administrator held that such coal is no longer needed in Indiana and Illinois because of the large production of coal in these states. This coal will be moved, however, to the Cincinnati switching district. Horace H. Herr, of the Indiana state fuel administration, says that the order will affect only the west tier of Indiana counties and that eastern Kentucky coal can still come to Indiana.

Toledo, Ohio—Activity at the Toledo docks of the various coal-carrying railroads continued, according to the figures of loadings given out covering the week ending Aug. 3. The Hocking Valley docks during the week loaded 164,602 tons as compared with 172,906 tons the previous week. The total for the season is 2,000,000 tons. During the same week the Toledo & Ohio Central docks loaded 73,000 tons as compared with 57,740 tons the previous week, making a total of 940,000 tons for the season.

Indianapolis, Ind.—Fifty tons of coal have been piled on the pavilion at the north side of the Federal Building and approximately 400 tons more will be added. The coal will be stored for heating purposes next winter. About 1200 tons of coal are required to heat the Federal Building each year, and when it was found that there was not sufficient room for storage in the basement the custodian of the building ordered the outside pavilion used. The coal will be piled on all sides of the fountain in the center of the pavilion.

Nelsonville, Ohio—The Buckeye Coal and Railway Co. has secured between 200 and 300 new workers at its mines in the Hocking Valley field, because of the closing down of the large number of brick manufacturing plants in the Hocking Valley. The company readily saw the value of the additional labor and secured the operation of special trains to bring the men from their homes to the mines, where they were most needed. This move has greatly increased the output of the company, which owns or controls 59 operations in the Hocking Valley.

Indianapolis, Ind. — Indianapolis Coal dealers will not be permitted to charge their customers more than 50c. a ton for wheeling coal from the street to the basement of a house. The administrator's ruling provides that the dealer and purchaser shall arrange for the price to be paid for the delivery of coal in bags. The Retail Coal Merchants' Credit Association announced a charge of 75c. would be established for wheeling coal from curb to basement or coal shed, $1 for delivering coal in bags to the first floor of a house and $1.25 for delivery of coal in bags in the basement. Fuel Administrator Matin Rehfuss then made an order reducing the wheeling of all coal to 50c. a ton from street to coal depository.

Louisville, Ky.—Recently an order was issued by the Fuel Administration placing Jeffersonville and New Albany, Ind., across the river from Louisville, out of the zone for western Kentucky coal supplies. However, the matter was taken up with the higher officials, and on Aug. 5, Fielding L. Wilson, Clark County administrator at Jeffersonville, received notice from Evans Woolen, state administrator, to the effect that western Kentucky coal would be permitted to enter the two cities, which for years have depended on western kentucky coal. The dealers had booked heavy orders on the strength of earlier rulings under which Kentucky coal could enter the cities. A few years ago both Jeffersonville and New Albany used Pittsburgh River coal almost exclusively.

Indianapolis, Ind.—A campaign to bring about a saving of approximately 20 per cent. of the fuel used in industrial plants of Indiana will be started at once under the direction of Frank C. Wagner, administrative engineer for the state fuel administration. L. R. Clapp, of Washington, D. C., representing the Federal Fuel Administration, has been in Indianapolis recently to confer with Mr. Wagner concerning preliminary plans for the campaign. Questionnaires will be sent to all owners of factories and industrial plants in the state asking for complete information as to conditions of boilers and furnaces, and suggestions will be made by Mr. Wagner as to changes in equipment and methods which will tend to reduce the supply of coal required to operate the plants.

Columbus, Ohio.—To instill patriotism into Ohio coal miners a series of war meetings is being conducted in mining districts which are expected to result in an increased production and a better spirit of coöperation with the nation's program. One of these was held last week at Byesville, attended by several hundred miners. Besides rousing a more defined win-the-war feeling in the workmen, each miner solemnly pledged himself to increase his individual production three tons daily. Among the speakers were General Schneider of the United States Shipping Board, President John Moore, of the Ohio Mine Workers' Union, and Sergeant Charles Blank, a British soldier, who suffered several wounds in battle. His story and plea to the men that they do their best to win the war made a strong impression on the miners.

Terre Haute, Ind.—The production of 2,865,163 tons of coal in Indiana during the month of July established a new record for Indiana, the output being more than 300,000 tons greater than the June production. In spite of the increase of production in the state, the supply will not be greater than required. The Fuel Administrator of Indiana expressed the hope last March that Indiana mines would produce coal at the rate of thirty million tons annually. Production has now reached the rate of 34,000,000 tons a year. The estimate of the Fuel Administration was made at a time when Kentucky and Virginia coal could be shipped into Indiana, and it was not required that the southern peninsula of Michigan be supplied with Indiana coal. These changes have made it necessary for the Indiana production to be increased above the tonnage which the Fuel Administration expressed as its desire early in the year.

Lexington, Ky.—On account of the shortage of labor in the mines of the State of Kentucky production will this year fall below the 27,000,000 ton showing of last season, according to an estimate made by F. C. Horton, assistant inspector of mines. This shortage of labor, according to Mr. Horton, is due to increased developments and to the selective draft, which has greatly depleted the miners' ranks. Some of the mines which have a capacity production of 1200 to 1500 tons a day have only been able to load out 300 to 400 tons a day of late. If sufficient labor could be had, Mr. Horton estimates the production would easily be 35,000,000 tons this year, the increase over last year being made possible by new equipment that has been installed in the mines. A coal production of this amount would place Kentucky fourth among the coal producing states of the country. The possibilities of the coal fields of Kentucky after the war are declared unlimited. The known supply at present is enough to last for 600 years, while the extent of the deposits in the eastern parts of the state are unknown.

MARKET DEPARTMENT

Weekly Review

Intense Heat Somewhat Retards Both Production and Distribution—Present Needs Well Supplied, but Anxiety Is Felt for the Future

THE intense heat of the past week has exerted an influence more or less potent upon coal production and distribution. So great was the heat that it was difficult to keep men on the tipples or in the washeries and breakers. Many retail teamsters and car unloaders either worked only part time or refused to work at all. This naturally did much to retard both production and distribution. With all of the heat, however, which in many localities made a high record, the output of the country only fell off about 3 per cent.

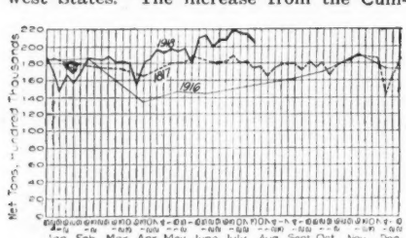
Reports received from all over the country fail to reveal any shortage in present needs. Some regions have been able to accumulate surplus stocks in fair volume; others have not been able to build up any reserves whatever. That portion of the country lying roughly between the Rocky and Allegheny Mountains appears to be fairly well supplied with fuel. True, coal is being pushed to the Northwest via the Great Lakes with all possible dispatch, and some complaint is heard of a fuel shortage (especially in domestic coal) in Michigan; the greater part of this region is nevertheless well supplied. Near its center, in southern Illinois, certain grades of coal are selling below Government schedule.

Scarcity of coal seems to be most pronounced along either coast. New England, while admitting that coal is coming forward in adequate supply to meet immediate needs, is apprehensive as to the future; and the belief appears to be prevalent that not enough coal is being stocked, especially by railroads and large industries. Complaints of a similar nature are heard from other regions such as Baltimore, where industry has been kept going by emergency shipments.

The Pacific Coast also appears to be somewhat short of fuel. Although little scarcity is felt at present, anxiety is expressed for the future; and it is anticipated that other fuels such as wood must be employed in considerable quantities there during the winter.

COAL PRODUCTION

During the week ended Aug. 3 the output of bituminous coal not only decreased over 3 per cent. but recorded the third successive week of decreased production. Production of bituminous coal (including lignite and coal coked) during the current week is estimated at 12,422,000 net tons, a decrease compared with the week preceding of 398,000 net tons, but an increase over the same week of 1917 of 1,563,000 net tons or 14.3 per cent. The average production per working day during the week of Aug. 3 is estimated at 2,070,000 net tons as compared with 2,137,000 net tons during the week of July 27 and 1,810,000 net tons during the week of Aug. 3, 1917. Shipments during the past week decreased from all districts with exception of Cumberland-Piedmont and Somerset, Tennessee and Kentucky and Iowa, Texas and the Southwest States. The increase from the Cumberland-Piedmont district was 7 per cent., from the Tennessee and Kentucky district 5 per cent. and from the district including Iowa, Texas and the Southwest States, 4.8 per cent. Material decreases in shipments were as follows: Western Pennsylvania, 6 per cent.; Ohio, 3.6 per cent.; the district including northern Kentucky, high volatile of southwest Virginia and Virginia anthracite fields, 7.8 per cent.; southwest Virginia, 16.8 per cent.; Alabama, 17 per cent. and the district including Illinois, Indiana and western Kentucky, 6.1 per cent.



Anthracite shipments during the week ended Aug. 3 decreased 1310 carloads or 3.2 per cent., the total movement amounting to 39,632 carloads.

Beehive Coke—Production of beehive coke in the United States during the week ended Aug. 3 is estimated at 606,000 net tons, a slight decrease compared with the week preceding. The average daily production during the current week is estimated at 101,000 net tons as against 103,000 net tons during the week of July 27. The principal operators in the Connellsville, Greensburg and Latrobe districts of Pennsylvania report production of beehive coke, during the week ended Aug. 3, at 342,644 net tons and operation of the plants at 76.5 per cent. of their present capacity as against 76.6 per cent. during the week preceding. The carriers furnished a 100 per cent. car supply during the week. The same operators produced 164,350 net tons of coal.

CARLOADS OF COAL ORIGINATING ON PRINCIPAL COAL-CARRYING ROADS

	Week Ended: July 13	July 20	July 27	Aug. 3
Bituminous shipments, 123 roads	235,291	229,770*	228,331*	220,823†
Anthracite shipments, 9 roads	42,419	40,664	40,942	39,632

* Revised from last report. † Subject to revision.

BUSINESS OPINIONS

Dry Goods Economist—Cotton and cotton fabrics received the major share of attention in all discussions of conditions in the world of dry goods this week. The two conflicting estimates of the condition of this year's cotton crop had just one point of unity. Each indicated a surplus, and of the two surpluses even the smaller one was large enough to cause men in cotton goods salesrooms to shrug their shoulders when asked what would become of prices if the holders of the surplus cotton decided to realize on it.

Bradstreet's—Trade and industry are quieter this week. Extremely hot weather has acted as a deterrent to industry, and though war essential lines are crowded with orders, civilian business in many lines tends to reflect more conservatism. This relative reaction proceeds from high temperatures, which have discouraged indoor and outdoor work, besides buying at retail, from the continuous induction of men into military life, which is telling on purchases of civilian attire, and from the fact that corn and cotton crop news is decidedly less favorable. The hot wave has, of course, cut down production of manufactured articles, and reorders are light, while less essential industries are being crimped more and more, either by governmental action or by the indisposition of the banks to advance large credits to the so-called non-essential lines.

American Wool and Cotton Reporter—The South American wool situation has been uppermost in the minds of the wool trade, particularly as to the question of getting wools into this country which have been previously bought and stored in South America. Some of the trade are protesting against the fact that not all established houses have been permitted to share in the purchase of this wool. The new clip is coming in fast from the West. The cotton market has taken a decided change. Many have become convinced that there would be a large crop of cotton and that without Government price fixing the weight of cotton would be such that prices would be depressed radically. Cotton is in a strong position and even though the carry-over will be great, the price is not likely to be specially low, and possibly not much lower that it is at present.

Atlantic Seaboard

BOSTON

While situation is comfortable as to current supply the undertone is one of apprehension. Apparently a fixed idea in Washington that New England requirements have been set too high and only through vigorous action will coal be allowed to come forward more than a few weeks longer on the present basis. All-rail movement from Central Pennsylvania continues favorable Wagon coal is a distinct help, although care has to be used in distribution. Shortage of labor makes unloading difficult. Similarly there is more congestion of steamers due to the lack of berth room to discharge railroad fuel. Hampton Roads dispatch is good, but the volume of coal running to the piers has already been reduced, and trouble is ahead when bottoms again reach the loading ports. Baltimore loading continues fair, although the diversion of coal from New York piers still presents a problem. Effort to make up anthracite arrears by shipments all-rail.

Bituminous—While the situation is still curiously mixed and some plants are overwell stocked and others have practically no reserve, the market is what in ordinary times would be called "easy." No consumer finds it difficult to get steam grades, particularly if he is willing to pay the price for water-borne coal. Largely for this reason, many of the small buyers have been lulled into a sense of security, as if coal were always coming forward on the present basis. In other words, all the circumstances would have to continue just as they are now, with an increased tonnage either for lake or other territory or for bunker and other Government requirements, and even then it would be extremely difficult for New England to pile up the reserves really necessary for continued operating during the winter. The larger railroads still have less than 40 per cent. of the reserve it has

always considered only prudent for them to have on hand by Nov. 1, and certainly curtailment now would be nothing short of disastrous in its effect upon New England in December and January.

Those having supervision at Washington are of course beset by serious problems. The heavy movement of troops and enlarged Government activities abroad, not to speak of additional ships for the naval force overseas and the demands of our Allies, all mean increased use of coal, and with all the advertising that has attended New England's efforts to get coal it is only natural the authorities should look to this territory as likely ground for curtailment. It is argued that from Apr. 1 to July 1, there was on paper a shortage of 2,000,000 tons, and yet all the wheels have kept turning. This, however, takes no account of the great extent to which coal has always been accumulated in New England against cold weather when deliveries both by rail and water slow up. One has only to compare receipts today with the volume of coal coming in last January to realize how much New England is dependent upon a reserve supply. Unconsciously those more familiar with conditions in the Middle States, where customarily reserves are much lighter, are apt to measure New England by their own yardstick.

All-rail movement from the Central Pennsylvania district has thus far been maintained on the July average, about 690 cars bituminous, including railroad fuel. The volume of shipments is therefore quite favorable, but it will probably not be long before there are whisperings of car shortage. This always reacts first against New England, although it will be interesting this year to observe the result in this respect of Government operation and the pooling of cars. Just now the situation is of some difficulty because we have good receipts by water; at the same time volume shipments by rail are reaching many of the mills, and in such way as to cause slow unloading. One result is a report through the Railroad Administration that New England is holding up cars and nothing could be more serious as bearing upon efforts here to keep coal coming continuously on the present basis. Here as elsewhere the labor shortage makes prompt rehandling next to impossible. This is especially apparent on wagon coal in box cars which is now being sent to New England from off the Pennsylvania railroad. Great care has to be exercised in distributing this coal to avoid just the kind of car congestion already referred to. The volume of this coal amounts now to perhaps 15,000 tons per week, and is a distinct help toward building up the desired reserve, particularly among smaller consumers and retail dealers.

Early in July there was so much anxiety over railroad fuel, and pressure was brought on Washington to such extent, that a large number of steamers were arranged for to freight the coal. One result is that for a fortnight past there has been actual congestion at the Boston piers and in several cases cargoes intended for railroad supply had to be unloaded for other purposes. In other words, there was a lack of berth room for the number of ships coming forward to the railroad wharves. Arrangements were made this week to work 24 hours a day, and the situation in this respect has materially improved. Apparently ships were loaded for Boston both at Hampton Roads and at Baltimore without much regard to the berths where they would discharge, and it has taken a good deal of ingenuity to give these ships anything like good dispatch. It has been expensive for the railroads concerned, but a suitable reserve is so necessary that no complaint is made.

Temporarily the volume of coal available at Hampton Roads is about on a level with the tonnage reporting, but already there are signs that the amount of coal running to the piers will soon be reduced. By-produc plants and the Western trade will now come in for their share, and detention will certainly follow for coastwise ships. Coal is running to the Baltimore piers in fair volume and thus far the dispatch has been good. A proportion of the coal, however, has been taken from the Western and line trade, and it is likely the volume of coal there will also be materially reduced. A it is now quite a tonnage is being diverted to Baltimore from coal that ordinarily runs to the New York piers for Long Island Sound points. How this tonnage is to be made up to ports like New Haven, Bridgeport and New London is still a problem. Most seriously does this affect illuminating gas plants that have relied upon regular receipts from the Fairmont region.

Anthracite — Domestic sizes all-rail are still being received in good volume. Movement through the five gateways continues on a 600 car per day basis. Retail dealers at many of the inland points have had more tonnage than last year at this time, but so great is the demand from the consumer that there is no accumulation anywhere. Deliveries by team are made as fast as receipts by car will permit.

The same thing is true of tidewater dealers, now that an increased effort is being made to build up the receipts of the latter by increased deliveries all-rail. This is being done all along the coast and the number of cargoes actually shipped does not measure the tonnage sent forward.

There continue to be many problems of distribution before the anthracite committee, and only gradually are these complications being cleared up. In many ways 1916 distribution presents an awkward basis for shipments this year, since in the fall of 1916 shipments were notably irregular.

NEW YORK

Anthracite moving easier and dealers optimistic. Excessive heat causes falling off in dumpings. Buckwheat No. 1 in good demand. Bituminous situation shows slight improvement. Demand continues and spot buyers make slow progress. Cars reported better.

Anthracite—Coal is moving easier and the entire situation is an improvement over the previous. While the dumpings for the week ended Aug. 9 show a decrease as compared with the previous seven days, the local trade seems to have handled more supplies. Locally the dealers complain of a lack of egg and stove, with broken, chestnut and pea much easier.

The market is in a fair way now to obtain supplies commensurate with its increased requirements and there are those who believe that orders similar to those issued by the anthracite committee of the fuel administration with regard to shipments to New England, will be sent out with respect to this market. Conditions with regard to the fuel supply in towns on Long Island are said to be bad, and the same is true of near-by towns along the water front which get their coal from this tidewater.

Receipts here are being drawn heavily upon because of orders issued by the anthracite committee of the fuel administration to producers and distributors stating that during this month water shipments to New England should be up to the maximum available boat equipment. At the same time all-rail shipments are to go forward on the present year's basis of allotment to each state. The committee also ordered that shipments of domestic sizes, including pea coal, shall be discontinued to 44 communities in Massachusetts, 45 in Connecticut and 146 in New Hampshire, directing that shipments shall be concentrated to other points in these respective states.

The improvement in the situation has not interfered with the activities for conserving fuel. A movement is on foot looking toward a union of church services in Brooklyn for the winter. Household consumers are securing their requirements in good shape and with reasonable receipts the situation is likely to be satisfactory by early cold weather.

Conditions in the mining fields are good. Production is heavy and with the labor situation remaining as it now is, operators believe they will be able to avert a coal scarcity such as the country faced last winter. It is estimated that of the 26,000,000 tons of anthracite mined during the first four months of the present coal year, 17,500,000 tons of domestic sizes have been placed in consumers' bins. A movement is also on foot to have the mine workers observe Labor Day by remaining at work, but this will not probably be accomplished. With all the mines idle it is estimated there will be a loss of 275,000 tons in production.

There was a loss of 605 cars in the dumpings at the local tidewater docks for the past week, 7004 cars having been dumped as compared with 7609 cars the week previous. Much of this loss was due to the excessive heat, the men at some of the docks refusing to work one entire day.

The steam coals continue active with the heavy demand for Buckwheat No. 1 continuing. Rice and barley are somewhat easier, but by no means plentiful, and with quotations at full circular prices.

Current quotations, per gross tons f.o.b., tidewater, at the lower ports, are as follows:

	Circular	Individual		Circular	Individual
Broken	$6.75	$7.50	Pea	$5.20	$5.95
Egg	6.35	7.10	Buck	5.10	5.90
Stove	6.60	7.35	Rice	4.65	5.10
Chestnut	6.70	7.45	Barley	4.15	4.30
			Boiler	4.60	

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates. Prices for buckwheat, rice, barley and boiler are not fixed by the Government.

Bituminous—Conditions are slowly improving. While free coals continue to be out of the market, regular customers are receiving good-sized supplies and the situation is in better shape. However, larger receipts would be welcome. Cars at the mines arrive in larger number, and some operators say they would be unable to load many more with the present labor supply.

The demand is steadily increasing, war industries asking for more coal than has yet been allotted to them. There has also been a heavy increase in the requirements for bunker fuel and producers whose mines were classified in either Pool No. 1 or Pool No. 71 are finding a ready market for their output.

Orders have been issued discontinuing Pool No. 72 as overseas bunker fuel. This pool was formed a few weeks ago by taking certain coals from Pool No. 10. These coals now revert to Pool No. 10, leaving Pools Nos. 1 and 71 as the exclusive pools for overseas bunker fuel.

Dumpings at the local tidewater docks for the week ended Aug. 9 show that 6763 cars were dumped as compared with 6619 cars the week previous, an increase of 154 cars.

Producers say conditions at the mines are gradually improving. Labor is more settled and, with cars moving easier, production is steadily showing an increase. Shipments to the New York market from central Pennsylvania for the week ended July 20 were 3534 cars as against 3325 cars the week previous.

There is a decided effort being made here to conserve fuel. Outside of the observance of "lightless" nights, one of the department stores is now open from 10 a.m. to 4:30 p.m. five days a week. Saving of fuel is also being accomplished in most of the big office buildings.

Stocks at the various docks are low. Spot buyers report few purchases and these far between. Bunkering is steady with the result that there is little surplus on hand.

Current quotations, based on Government prices at the mines, net ton f.o.b. tidewater, at the lower ports, are as follows:

	Mine Gross	F. o. b. N. Y. Gross
Central Pennsylvania:		
Mine-Run, prepared or slack	$3.30	$5.45
Upper Potomac, Cumberland, and Piedmont Fields:		
Run-of-Mine	3.08	5.23
Prepared	3.36	5.51
Slack	2.80	4.95

Quotations at the upper ports are 5c. higher.

PHILADELPHIA

Anthracite activity halted temporarily by heat. Overshipments to some sections cause trouble. One company close to quota on local trade. Outlook seems better. Labor question unsettled. Public works getting good supplies. Stove and nut in heaviest demand. Steam situation unchanged. Good tide business. Bituminous car supply improved. Good shipments received. Plans for increased production.

Anthracite—Due to the unprecedented hot weather, the various sales agents report the trade has allowed them a week of comparative quiet. They have had fewer personal calls from the dealers than for many weeks and even their telephones have been quieter. The heat also interfered to a considerable extent with retail deliveries and many yards shut down completely during several afternoons. The demand also fell off, temporarily, but will increase now that September is near with new prices going into effect in the fall.

The feature of the week has been the unusual shipments to West Philadelphia, and the methjod of shipping has been severely criticized. Several dealers received more coal in a few days than they could possibly unload in so many weeks. The dealers were anxious for the coal, but in some cases there was considerable transferring. The new car service rates make the rates so exorbitant for demurrage that it is out of the question to allow the cars to stand any length of time. Later when these same dealers ask for more coal they fear the fuel authorities will take the stand that they have not coöperated with them.

It would appear to some that the authorities have judged by the unfilled orders and where a dealer was a few thousand tons behind on his deliveries, took it for granted he would be glad to receive the coal at once. There are others who intimate the shippers complied with these requests of the local fuel people and shipped as they directed, only to show them that they had not yet mastered the situation.

In directions other than West Philadelphia the shipments have not been free and at least one big company is advising its trade that it expects to be one month behind until the New England situation has been relieved. This company has large obligations in New England and the in-

creased percentage ordered there was the cause of restricted shipments to customers in this city.

The company above referred to was also ordered to supply a large block of coal for the public schools here. This is business it has not handled before and further upset their plans for their local trade.

At the office of another big company it was learned that its most desirable trade had received its quota for the first quarter of the 1916-17 coal year, and in some cases this included the increase of 18 per cent. The fuel administration has cut off so many places to which this firm formerly consigned coal that its responsibilities have been greatly relieved. A spirit of optimism is manifest that has been absorbed by some of its largest buyers. Several of the largest retailers state that while they expect trouble all winter they are satisfied the experiences of last season will not be repeated.

Broken is now never heard of as a domestic fuel. Consumers of this size have been converted to the use of egg. Egg coal is not short, except in the suburbs. Stove and chestnut continue to be the sizes most sought after by the dealers and unfilled orders call chiefly for these two sizes. Pea is now actually easy with some dealers but by winter will undoubtedly be in greater demand than any of the other family coals. Less pea than either egg, stove or nut has been ordered and consequently by cold weather there will be less stored in the cellars. Naturally the dealers are crying for it, for they know of the coming demand, but there are a number who even now have fair stocks.

There has been no noticeable change in the steam trade recently. One week is simply a repetition of the preceding one. As a matter of fact there is little solicitation now on the part of steam users for further supplies, as they have by this time felt out all the possible sources of increased supplies. Old customers continue to accumulate almost unusual stocks of all the steam sizes. This is especially the case with several large department stores, who are accumulating extra large stocks on vacant lots. There is little culm activity locally, but heavy shipments are still going forward to eastern points. There has also been an increase in the tide shipments, but the rail movement to eastern points is still considerably in excess of normal.

The prices per gross ton f.o.b. cars at mines for line shipment and f.o.b. Port Richmond for tide are as follows:

	Line	Tide		Line	Tide
Broken	$4.90	$6.25	Buckwheat	$3.40	$4.45
Egg	4.50	5.85	Rice	2.90	3.80
Stove	4.75	6.10	Boiler	2.70	3.70
Nut	4.85	6.20	Barley	2.40	3.30
Pea	3.45	4.70	Culm	1.25	2.15

Bituminous—This week there has been a considerable improvement in the car supply, although there has been no change in the situation as to the adoption of the old rating plan by the Pennsylvania R. R. in the central Pennsylvania region. As a consequence of the improved car supply shipments received here have also increased and essential plants are adding to the already quite large stocks they are accumulating.

Plans are well developed by local operators whereby a systematic effort is to be made to encourage the miners to increase production. This is in pursuance of the Government's plan to have a committee of miners at each operation take charge of this problem and thus reach the men and keep them constantly impressed with the importance of their work to the nation.

BALTIMORE

More than 100 cars of special relief coal aids situation here. Conditions remain tight, however. Complaints of quality heard, even on preferential coal. Little change in anthracite situation except that deficit on apportionment grows.

Bituminous—Faced with facts to show that many important industries not on the actual preferential list were in dangerous condition as to fuel supply, the Washington fuel administration officials arranged for diversion of more than one hundred cars of soft coal to Fuel Administrator Meyer the past week. These came in small batches from District Representative Brydon and in considerable measure were assigned to the packing business which had been hard hit for lack of fuel at the height of the packing season. Others went to the more urgent needs on a list held by the fuel administrator, and by a close distribution and the aid of local coal men the situation was tided over and is still being handled in that fashion.

There is at present wide complaint as to the grade of coal coming through. For a time such complaints were made by those outside of preferential delivery, and the granting of best coal to war industries and public service corporations was given as the reason for the poorer grades reaching general business. Now there are also complaints from every source of much dirty coal. Numerous rejections have been noted from the Tidewater Pool, and a curtailment of street car service in this city the past week was blamed by the electric line officials largely on poor grade coal that cut down boiler efficiency.

Anthracite—Not much change is to be noted in the hard coal trade here. Receipts continue below normal. The local fuel committee has been promised that the full allotment will finally come through—just when is a question. Whether enough can now be secured to give all consumers here the planned two-thirds on orders before winter sets in is extremely doubtful. Some coal men are frank to say that even if the coal was poured in in unexpected quantities in September that the war-limited equipment and forces of the dealers here would not allow of its handling.

Lake Markets

PITTSBURGH

Production well maintained. Ample Lake transportation facilities. Coal needs of the iron and steel industry. Practically no market.

Production of coal in the Pittsburgh district is well maintained and with long range comparisons shows a material increase. There is no surplus of rail coal for stocking purposes, however, as the rule still holds good that after the current requirements of essential industries are taken care of the balance must be shipped in the Lake trade, and the Lake shipments thus far have not increased greatly over the allotments made prior to the ruling that the Pittsburgh district would have to make up for the decreased shipments from West Virginia and Kentucky due to their being required to furnish much more coal for the Navy.

There is an ample supply of Lake transportation. The Lake fleet moved in July 10,659,203 tons of iron ore, making a new record for a month, while the railroads are handling the coal to Lake ports well, no congestion at docks being reported.

If the steel mills require anything like the amount of coal the War Industries Board estimates the Pittsburgh district and other regions serving the steel industry are going to be kept very busy, for in a recent conference the War Industries Board informed the Fuel Administrator that the steel requirements for the present half year are 22,000,000 net tons, and that nearly five tons of coal is required per ton of steel, so that 110,000,000 tons would be needed for the half year. The demand was evidently made with a view to its being scaled down, for coal is hardly plentiful enough to give the iron and steel industry a supply equal to 220,000,000 tons a year. The board had previously undertaken to remind the steel industry that it had never made more than 16,500,000 tons in a half year, and it is obvious that more coal is not the only requisite in increasing the steel output. The allowance of five tons of coal per net ton of finished steel is also excessive. A fair estimate, though a rough one, would be 70,000,000 net tons of coal a year to produce the coke the blast furnaces use, and about 80,000,000 tons a year, for power, for producer gas and for heating steel, making 150,000,000 net tons of coal a year, or 75,000,000 tons for a half year. This amount would probably represent the outside consumption possible by the iron and steel industry if everything else were absolutely favorable to its full operation.

The condition remains that there is practically no open market in coal, such transactions as occur being in almost all cases the result of allocations. The brokers are doing but little business now. The market remains quotable at the set maximum prices: Slack, $2.10; mine-run, $2.35; screened, $2.60, per net ton at mine, Pittsburgh district, with 15c extra permitted to be charged by brokers to buyers.

BUFFALO

Trade slowing up somewhat. Diversion of coal to other points probably the reason. Cars more plentiful. Fear entertained that this district will run short.

Bituminous—The market is hardly keeping up with former activity and there is some uneasiness on that account. The question is how long the diversion of coal that is naturally tributary here will go on. If it lasts all the summer and fall it will leave this territory short of essential requirements. Coal that would otherwise go to points in this territory is being ordered to New England and up the Lakes, so that the operators themselves do not know what promises to make or what orders to take.

At the same time all jobbers and sellers are trying to be active. Some of them are sending out extra men to hunt for coal in order to keep a supply for their customers. They have about dropped the practice of selling at delivered prices. So many items must be added, such as freight, war tax, profit and the like that mine prices have been adopted to a great extent. Everything is so subject to change that often a shipper is unable to fix a delivered price and be safe in it.

This state of things, so many dealers with prices of their own, is such that it often takes considerable figuring and estimating to give a quotation. Consumers appear to understand this and are not insistent on this or that price. What they want is coal. They can no longer buy what they need in the open market. If they get coal for their manufacturing they are pretty sure of a good profit, no matter what it costs. If they do not get it they can do nothing.

Allowing for minor differences the prices of bituminous are $4.65 for thin-vein Allegheny Valley coal, $4.45 for Pittsburgh lump, $4.20 for mine run and slack, $5.85 for smithing and smokeless and $5.50 to $6.10 for cannel, all f.o.b. Buffalo per net ton.

Anthracite—The demand is as insistent as ever, in spite of hot weather. Advices from Canada agree that the amount possible to be got into that territory is sure to be light, but wood and bituminous coal will be laid in to take its place. Shippers and retailers do not agree as to the amount put into cellars here. One says the ordinary amount is delivered and the other is sure of a shortage.

CLEVELAND

Signs are becoming increasingly evident that the movement of bituminous coal to the Northwest must be continued until near the end of navigation. Shipments, which at the end of July were a round million tons behind the Fuel Administration's schedule, continue losing at the rate of 200,000 tons a week. Official orders have been received by operators in the Pittsburgh vein district of southern Ohio, that they are expected from now on to turn over 1200 cars daily to the lake trade. Industrial stocking of bituminous may well be said to be at an end, for the present.

Bituminous—Famine conditions seem inevitable until the close of navigation on the Great Lakes now that D. F. Hurd, secretary of the Pittsburgh Vein Operators' Association of Ohio, with offices in Cleveland, and zone director for the Fuel Administration, has formerly notified operators in the Pittsburgh vein district of southern Ohio that they are expected to provide the lake trade at least 1200 cars a day from now on. This means that receipts for industrial and domestic purposes here will be cut fully 50 per cent., and receipts for the past three or four weeks have been far short of spot requirements. The latest report of the output of operators who belong to the association, which covers the period ended July 21-31, shows that the output totaled 9005 cars, of which 1886 cars went for railroad fuel, 4778 to the lake trade, 1772 to Ohio, 450 to Indiana and Michigan and 119 to Canada.

Shipments of No. 8 coal from members of the association in July as compared with July, 1917, according to official figures compiled by the association, were:

	July, 1918		July, 1917	
	Cars	Per Cent.	Cars	Per Cent.
Railroad	6,094	23.01	7,336	37.91
Lake	12,980	49.37	6,428	33.21
Trade	7,262	27.62	5,590	28.88
Totals	26,291	100.00	19,354	100.00

From this it will be seen that to divert 7200 cars a week to the lake trade will require more coal than was produced for all purposes in July.

Labor conditions in the southern Ohio coal regions are reported only fair, with no prospects of immediate betterment by reason of the increased demand of the war services for men. Car supplies continue at between 90 and 100 per cent.—in any event ample for the labor forces. Detailed figures on the car supply accorded members of the Pittsburgh Vein Operators' Association of Ohio for July are:

Railroad	Car Rating	Supplied in July	Short	Tons Short
B. & O.	16,509	13,794	2,715	135,750
Penna.	9,166	8,174	992	49,600
W. & L. E.	8,263	7,306	957	47,850
N. Y. C.	2,236	1,958	278	13,900
Total	36,174	31,232	4,942	247,100

Anthracite—Due to the operation of the zoning system virtually no anthracite or smokeless coal is entering this market.

Lake Trade—Bituminous is coming forward liberally to lower lake ports, and cargo space is ample; but shipments seem not to be able to get much ahead of 1,000,000 to 1,050,000 tons a week. With a schedule calling for 4,900,000 tons each in August and September, and the lake movement a round million tons behind by the close of July, it can readily be seen why lake vesselmen see the coal season continuing up to the very end of navigation. Revised figures for the week ended Aug. 3 place the shipments at 1,050,000 tons. The estimate for the movement in the week ended Aug. 10 is the same. Reports that Pittsburgh vein operators in southern Ohio would be called upon to supply 1200 cars daily for the lake trade have become fact with the issuance of such an order in the past week. This is one of the results of the visit here ten days ago of Charles P. White, who is in charge of lake and Canadian coal shipments for the Federal Fuel Administration. Government figures show that in July 2,121,603 tons of bituminous coal passed upbound through the Soo canals, while anthracite shipments amounted to 233,764 tons.

DETROIT

Inadequate supply of anthracite and domestic bituminous alarms Detroit manufacturers, who fear migration of labor. Lake movement holds volume.

Bituminous—Distribution of winter fuel in Detroit is still impeded by the restricted supply of domestic stock available. Jobbers report fair amount of steam coal is coming into the market, though the quantity is not sufficiently large to provide a reasonable supply for building reserves after provision is made for the day to day needs of steam coal users. The stock reaching the city is largely mine run of a character unsuitable for use in household heating plants. The proportion of lump and domestic coal is small and jobbers say little success attends their efforts to increase the supply.

Users of steam coal are actively in the market. There is no free coal on tracks and the accumulation of reserve supplies is not general, though some of the larger establishments have succeeded in putting aside a comfortable surplus.

Anthracite—Detroit's anthracite receipts show no improvement. Instead of shipments arriving in increased volume, as the season advances, it is reported the movement has dwindled down to around 18 or 20 cars a day. With the great r proportion of Detroit's domestic consumers having heating plants in which anthracite is ordinarily burned, the situation is assuming an alarming aspect. Manufacturers assert that continuation of operations on war orders is likely to be jeopardized by an exodus of labor from Detroit unless immediate action is taken to increase the present supply of coal and improve the prospects for augmenting the supply later.

Representatives of several large corporations have been appointed to a committee which will go to Washington within a few days to present an appeal to the war industries board, the shipping board and the secretary of war. The committee will also appeal to the federal fuel administrator, if he is back from his vacation. In the effort to improve Detroit's situation, the local Board of Commerce has appointed Edward J. DuBois, vice-president of the American Coal and Coke Co., as a permanent representative in Washington.

Lake Trade—Shipments of coal over the Lake routes are showing a slight increase in volume, and for the week ending Aug. 3 carriers loaded 1,050,000 tons. This is the heaviest movement of any one week for the season. Even this falls short, however, of the schedule of 4,900,000 tons which shippers had decided would be necessary for the months of August and September to assure supplying the Northwest before the coming of winter.

COLUMBUS

The hot weather has had its effect on mining operations and production is smaller. Lake trade is booming. There is a good steam and domestic demand.

The extreme hot weather which has prevailed for a week has had a bad effect on mining operations. Miners are not as active; neither are tipple men or outside labor. The result is that a curtailment of production, while not marked, is having its effect on the demand. Retail trade is active and there is not a great deal of coal going to the dealers because of priority orders. On the whole the tone of the trade is good and prospects are considered bright.

Lake trade is now attracting the major part of the attention of producers and shippers. Under orders from W. D. McKinney, federal representative, about 85 per cent. of the production of Ohio mines is being moved to the Lakes for shipment to the Northwest. Reports show that there is still a shortage in the upper lake region although this is not as bad as earlier in the season. The vessel movement has been good.

The domestic trade is rather quiet, although there are frequent demands for tonnage on the part of dealers. Consumers are placing orders rapidly as a survey of the state shows that many householders have not yet arranged for the winter's fuel. Retail prices are firm at the levels which have prevailed for some time. Retail stocks are small. Some West Virginia splints are on hand but the amount of Pocahontas is small.

Steam demand is also strong but a minimum tonnage is allowed steam users. The question of necessity enters largely into apportioning tonnage for steam plants. The smaller users as well as the heavy consumers have been able to accumulate a fairly good surplus and as a result industry is not suffering. Many large consumers have enlarged their storage facilities and have a larger tonnage on hand than ever before.

Production is rather good despite the labor shortage and the extreme hot weather. The Hocking Valley is working at about 85 per cent. of capacity and eastern Ohio is producing in the neighborhood of 80 per cent. Other fields also show good production figures.

LOUISVILLE

Production continues comparatively light, with car supply inadequate, and labor somewhat harder to secure. Steam demand is normal, with domestic demand heavy, and dealers well behind on orders. So far dealers have been unable to secure any surplus.

Deliveries of coal to steam and domestic consumers have been handicapped somewhat during the past week by the hottest weather in 17 years, the thermometer going to 105 deg., on Monday, Aug. 5, with a street temperature of 117 deg. This made it hard to hold men, and keep animal-drawn carts moving. This has been the most peculiar season of many years. Just after the first of the year the coldest weather for 40 odd years was experienced, and now we have the hottest weather since 1901.

Production in the eastern Kentucky fields is showing no improvement, and is dropping off in the western Kentucky fields due to the heavy drafting of negroes, who are claiming few exemptions, and patriotically reporting when called. With the starting of the cotton picking season it is expected that many negroes will leave the mines for a time, making the situation still worse.

Heavy movement of coal into the Lake district has made the car shortage more acute. However, the use of coal cars is being materially restricted for handling coal alone, and this should aid things somewhat.

In Indiana and points west of the Mississippi florists are having an easier time of it than in the Eastern sections. Indiana florists have been advised that they may burn low grade Indiana screenings in addition to their 50 per cent allowance of steam coal. Efforts of Kentucky florists to secure the same advantage have been of no avail.

BIRMINGHAM

No important changes in market conditions. Demand strong for all grades. Supply slightly improved. Production last week reached highest recorded figure. Shortage of cars causing loss in output at some operations.

The past week did not develop any material change in trade conditions locally. The production for the week ending July 27 showed a gain of about 15,000 net tons over the output of the previous week, according to figures compiled by District Representative E. A. Homes, of the Fuel Administration. This was a record production for Alabama, and it is expected that a substantial increase will be noted each week from now on.

Inquiries for steam coal are showing no diminution and the requirements are in excess of the supply available. The slightly increased production has not affected market conditions as yet, and the output will not likely reach such proportions as will greatly ease the tenseness of the demand on this district.

Domestic trade continues steady and records indicate that more domestic coal was bought by consumers in July than the preceding month. Dealers are delivering coal from the cars set into their yards in many instances and only a few retailers have any coal in stock.

Men in the coal-mining district as a whole appear to be working more steadily, though there is yet much idleness among the mine workers, which is causing a heavy loss in the output. Mines on the Frisco have lost some time during the past week, from one hour to a whole day, waiting on equipment for loading, coal cars being rather short with this line.

Coke

CONNELLSVILLE

Continued completion of by-product ovens. Connellsville ships more raw coal. Ruling on cleaned coke. Merchant oven output maintained.

The feature of the coke situation continues to be increased production of by-product coke. At the Clairton plant of the Carnegie Steel Co., where the first coke was made late in June, the first battery of 128 ovens is now in full operation and producing about 10,000 tons of coke per week. This is sufficient to operate the three Clairton blast furnaces. The second unit is expected to be in moderately full operation by the fore part of September, and three more units by the end of the year. Completion of the remaining six units will occur much later.

The Lorain plant of the National Tube Co., which will embrace 208 ovens altogether, now has half its ovens in practically full operation, with expectations that the remaining half will be in practically full operation within 60 days. The 180 ovens at Cleveland of the American Steel and Wire Co., where the first coke was made in May, are now in full operation. A few of the 204 additional ovens of the Youngstown Sheet and Tube Co. were completed a few days ago, but are only now starting, as there was a delay in receipt of additional coal supplies.

These various new plants draw their coal largely or wholly from the Connellsville region, which accordingly has much difficulty in maintaining its coke production in face of the additional coal that must be shipped. The last week reported upon showed merchant ovens operating at as good a rate as they have attained this year, but production by furnace ovens decreased 12,000 tons. This is the only decrease attributable to the drain of new by-product ovens, so that on the whole the production of coke, by one process or another, from Connellsville coal is increasing.

The local fuel administrator has ruled that coke that is screened and otherwise cleaned may be sold at as high as $6 if it is not in prepared size, and it would appear that even if it is screened from an old dump it would be permissible to sell it at up to $7.30 if over 3-in. Such material, from old dumps, has brought up to $6.50 and while it is practically as good for heating purposes as new crushed coke its appearance is against it and the retail dealer must be given a concession in consequence.

Scarcely any furnace coke is offered in the market, but a number of operators continue to offer foundry coke rather freely and the foundries appear to be stocking up. The market remains quotable at the set limits, as follows: Furnace, $6; foundry, 72-hr. selected, $7; crushed, over 3-in., $7.30, per net ton at ovens. Screened and cleaned coke not sized is limited to $6, cleaned crushed under 3-in. to $5 and breeze to $3, but these prices could hardly be obtained.

The Courier reports production in the Connellsville and Lower Connellsville region in the week ended Aug. 3 at 340,980 tons, a decrease of 11,645 tons. The decrease was wholly in the furnace oven production, the merchant oven production increasing 550 tons to 142,930 tons.

Buffalo—The demand is heavy, as all furnaces are running strong. It is always hard to get a supply, but, at least, this is accomplished to such an amount that no shutting down is reported. Jobbers do not try to handle coke but get a good profit on the breeze that they obtain from the by-product plants.

Middle Western

GENERAL REVIEW

Operators disturbed over Fuel Administration's rulings relative to sized screenings and modified mine-run. Shortage of skilled labor. Idleness reported on account of poor car supply.

Coal operators in the Middle West, in general, and in the southern part of Illinois,

in particular, are disturbed, to put it mildly, over the recent decisions of the Fuel Administration relative to sized screenings and modified mine-run.

The Fuel Administration's statement No. 667 reads as follows: "For all special sizes passed over a mesh over ¾ in. in size the mine price for prepared coal is allowed." This paragraph clears up a doubtful point; namely that such coal from Franklin County or Williamson County as special stove (2 x 1¼ in.) or domestic chestnut (1¼ x ¾ in.) shall be considered as much a prepared size as lump or egg. The ruling goes on to state, however, that for special sizes passing over ¼-in. and under ½-in. screens, the mine price for run-of-mine coal is allowed. This classes as mine-run carefully prepared pea coal (½ x ¼ in.), which is given just as much care in producing and preparing as the larger sizes. This coal is not used at all extensively for domestic purposes, except perhaps for underfeed furnaces, but makes a highly efficient steam fuel. This pea coal, or No. 4 nut, as it is sometimes called, is just as expensive to produce and prepare for market as the larger prepared sizes, and there is a question in the minds of the operators affected just why the Fuel Administration made this differential. The ruling goes on to state as follows: "For all fine sizes passing through a mesh of ¾ in. or smaller the price fixed is 30c. per net ton less than the prevailing price for standard screenings. If fine screenings or carbon, passing through ½-in. or smaller mesh as a result of producing specially sized screenings are mixed with other coal, the selling price shall not exceed the applicable Government price, less 30c. per net ton." This reduces the price on carbon, or No. 5, as well as ¾-in. screenings from $2.05 per ton to $1.75 per ton. Roughly speaking, 20 per cent. of the entire output of a southern Illinois mine is ¾ or ½-in. screenings. This reduction of 30c. per ton is a serious matter to these operators.

Another ruling unfortunate for the Illinois and Indiana operator was issued around the first of the month. This ruling modifies to a large extent the United States Fuel Administration's statement No. 617, issued July 6, which allows for special prices on modified mine-run. According to the original statement, No. 617, modified mine-run is mine-run passing through a screen with 2-in. perforations up to 6-in. perforations. The new ruling states as follows:

"In certain districts there are mines which prior to Jan. 1, 1916, used 2 to 2½-in. standard screens and which consequently should sell coal passing through such screens at the applicable slack price, according to the terms of the order of May 27. These same mines are now reported as billing this product at the modified mine-run price, thereby overcharging the consumer from 10 to 12c. a ton."

In other words, if an operator in Illinois made 2-in. screenings prior to January, 1916, he can only charge $2.05 per ton for such screenings. If, however, he made 1½-in. screenings at that date, and say six months ago changed his screens to 2 in. then he is entitled to charge for his coal on a modified mine-run basis, which would bring 2-in. screenings up to $2.17.

The labor situation in the field is practically unchanged. There is a tremendous shortage of skilled labor, such as machine runners, and motormen, but there is a plentiful supply of common labor. The local exemption boards are reported to be coöperating with the operators and helping them in every way to procure men for the mines. The car situation for this period is not as good as it has been for the past few weeks.

CHICAGO

Heavy production almost resulted in sharp break in market. High grade coal scarce. Lower grades selling freely. Car supply poor.

There is not much change in the Chicago market. High grade coal is still difficult to purchase, and the medium to lower grade products are selling freely on a basis of "Government price current at time of shipment," or below this basis.

The recent heavy production periods nearly brought about a sharp break in the market, but this was avoided by placing a large tonnage in the lower peninsula of Michigan, as well as parts of Ohio, for Indiana coal. In addition, the car supply has not been as good as it had been for the past few weeks, and this was also a factor in keeping the market fairly firm.

MILWAUKEE

Fuel administrator receiving complaints of overcharge on the part of some dealers. Registration of coal and coke distributors.

The coal market, if the present method of trading in coal can be called marketing, is abnormally active for the season. Small dealers complain that they are not allowed sufficient hard coal to keep their teams busy. Some say that at the present rate of supply they will not be able to fill their orders until next spring. Bituminous coal, however, is being handled freely.

An additional charge of 75c. is being made by some hard coal dealers on what they term "premium coal," or coal secured by them after special effort and at above normal expense. This has resulted in complaints of overcharge. Fuel Administrator Fitzgerald has referred the matter to headquarters at Washington for instructions. Meanwhile the dealers interested will continue to exact the extra sum.

The anthracite coal situation is improving, as far as this district is concerned, and the opinion is expressed that there i now hard coal enough in sight to meet the needs of the state on the basis of current restrictions. The recent advances of 40c per ton was made, it is alleged, to cover increased freight rates. The new retail margin decided upon by the advisory board of the fuel administration has not yet been announced, but it is practically the same as the margin now in force—$2.25.

The work of registering coal and coke dealers in this district is now in progress. Every fuel handler, including organizations distributing coal to employees or members, must register by Aug. 20, with county fuel administrators, and the certificate of registration must be posted conspicuously. Coal and coke wholesalers are warned, under severe penalty, not to sell or ship fuel to those who have not complied with the registration order.

Two cargoes of hard coal, aggregating 15,300 tons, were received since last week's report. A feature of the week was the docking of a record-breaking cargo of bituminous coal—13,768 tons. August will b a big month if the present volume of receipts is kept up. The record up to and including the 7th, is 15,300 tons of anthracite and 163,716 tons of soft coal.

ST. LOUIS

A continued quiet market, with a let-up in the domestic demand on everything except Carterville. Steam sizes moving slow. Hot weather affecting shipments. Car supply poor, while movement shows improvement.

In St. Louis proper the coal situation is almost at a standstill. The weather the past week has been the warmest on record here for 17 years, and it has affected domestic deliveries. Many of the inexperienced drivers who take the places of those who have been drafted quit after making a load each day, and many of the larger companies had two-thirds of their equipment in the stable. The result is that the yards are pretty well loaded with coal, drawing demurrage, and the scarcity of help to unload steam coal has caused a surplus of steam sizes to accumulate.

In the Southern Illinois field there has been a scarcity of water at many of the mines that is interfering with production. Car supply has been poor in the Carterville field, and transportation not all that it might be. The Missouri Pacific R. R. was short 300 cars for railroad coal in this field last week.

The labor situation is becoming acute again in view of the prospects of losing a large number of miners in the August draft, and only by the most strenuous efforts are the operators enabled to keep a large number of men from enlisting in the Navy in order to evade being drafted in the Army. Somewhat similar conditions exist in the Duquoin field.

In the Harrisburg district, from which territory a small tonnage comes in to St. Louis, the conditions are worse in some respects than in the Carterville field, especially as regards water. Throughout both of these fields the power for the operation of mines is supplied by a public service company, and the service has been so unusually poor that it is also affecting the tonnage produced, causing dissatisfaction among the men.

Conditions in the Mt. Olive field are uniformly steady. There is little variance week after week in this field. The car supply is fairly good. The labor supply is affected as in other fields, but it is not quite so apparent.

The tonnage produced here about equals the demand. Although a large railroad tonnage moves from this field the same as from the Carterville and the Duquoin fields, it is not affecting the domestic deliveries.

In the Standard district there is a car shortage and a surplus of screenings from the mines that do have cars. Added to this is the unequal distribution of empty equipment, which still continues in the face of protests from mines.

The water shortage is also severe at some of the mines here. There is a surplus of coal at the present time in this field that is being moved to the Northern markets and also to towns in Michigan. Locally, St. Louis is pretty well supplied with domestic coal of this grade, and from now on for some time a larger movement of this coal can be expected to move to Michigan and Northern points.

There are no eastern coals of any kind coming in and very little Arkansas. Standard 2-in. lump is a little under the maximum Government price. It is selling as low as $2.35 and $2.40 while screenings are around $1.65 and $1.70. All other sizes from all other fields are bringing the Government maximum. The Government maximum price here is, per net ton f.o.b. mines:

	Williamson and Franklin County	Mt. Olive and Staunton	Standard
6-in. lump	$2.55@2.70	$2.55@2.70	$2.40@2.70
3x6-in. egg	2.55@2.70	2.55@2.70	2.35@2.55
2x3-in. nut	2.55@2.70	2.55@2.70	2.35@2.55
No. 2 nut	2.55@2.70	2.55@2.70	.....
No. 3 nut	2.55@2.70	2.55@2.70	.....
No. 4 nut	2.55@2.70	2.55@2.70	.....
No. 5 nut	2.05@2.20	2.05@2.20	.....
2-in. scrgs	2.05@2.20	2.05@2.20	1.25@1.50
3-in. lump	.....	.....	2.25@2.40
2-in. lump	.....	.....	2.25@2.40
Steam egg	.....	.....	2.25@2.40
Mine run	2.35@2.50	2.35@2.50	1.85@2.00
Washed:			
No. 1	2.75@2.90	2.75@2.90	.....
No. 2	2.75@2.90	2.75@2.90	.....
No. 3	2.55@2.75	2.55@2.75	.....
No. 4	2.55@2.75	2.55@2.75	.....
No. 5	2.05@2.20	2.05@2.20	.....

Williamson and Franklin County rate is $1.10; Duquoin field, $1; Standard and Mt. Olive fields, 95c.

SEATTLE

State warned to lay in a supply of coal. Coal dealers required to secure licenses. Curtailment of power to save fuel is started. New mining operations discouraged.

If Washington or British Columbia coal is needed somewhere else it will be ordered sent there by the fuel administration, if fuel oil must be withdrawn and coal substituted, or if wood or other fuel can take the place of coal such action will be taken according to A. W. Calloway, director of distribution who has been investigating methods to speed up coal deliveries. The fuel shortage it is believed is going to be felt more next year than this winter and there is no way to avoid this winter's shortage.

Coal buying and distribution in the Northwest is to be readjusted according to Mr. Calloway. California contends it cannot get enough British Columbia coal and must therefore depend upon Wyoming and Utah. Portland argues that it must have Utah coal because it cannot get Washington coal. In eastern Washington consumers are drawing upon Montana and Utah for coal that should be supplied from this state or the Crows Nest fields of British Columbia. Mr. Calloway therefore believes that Washington is going to be compelled to supply her own needs and the needs of steamships here. This will release British Columbia coal which stands shipment better to San Francisco.

Retail coal dealers of the state have been required to register not later than Aug. 15. About 600 coal dealers are affected in the state. The registration is considered necessary for proper distribution, the control of the retail market situation and the securing of reports from retail dealers in the stocks on hand and the amount of coal handled by them.

General Statistics

NORFOLK & WESTERN TONNAGE

Coal tonnage from mines on the Norfolk & Western Ry. and from other railroads, for the month of June, 1918, were as follows:

From	Net Tons
Pocahontas Field	1,511,208
Tug River Field	305,025
Thacker Field	275,267
Kenova Field	96,098
Clinch Valley Field	138,467
Other N. & W. Fields	14,090
Total N. & W. Fields	2,340,155
Williamson & Pond Creek R.R.	183,556
Tug River & Kentucky R.R.	56,842
All other railroads	99,663
Grand total	2,680,216